

=> fil reg
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STRUCTURE FILE UPDATES: 3 DEC 2008 HIGHEST RN 1079441-15-8
 DICTIONARY FILE UPDATES: 3 DEC 2008 HIGHEST RN 1079441-15-8

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TSCA INFORMATION NOW CURRENT THROUGH July 5, 2008.

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<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d que

L2	21	SEA FILE=REGISTRY ABB=ON PLU=ON (101407-39-0/BI OR 105218-97-1/BI OR 105359-94-2/BI OR 110749-59-2/BI OR 13676-54-5/BI OR 24980-39-0/BI OR 24991-11-5/BI OR 28827-74-9/BI OR 3006-93-7/BI OR 500577-35-5/BI OR 500577-36-6/BI OR 51518-44-6/BI OR 54053-19-9/BI OR 54571-76-5/BI OR 54909-96-5/BI OR 58845-19-5/BI OR 58845-24-2/BI OR 606081-14-5/BI OR 689258-98-8/BI OR 689259-00-5/BI OR 689259-05-0/BI)
L4	2158	SEA FILE=REGISTRY ABB=ON PLU=ON 3-AMINOPHENOXY?/CNS
L5	6	SEA FILE=REGISTRY ABB=ON PLU=ON L4 AND L2
L9	6055	SEA FILE=REGISTRY ABB=ON PLU=ON 2421-28-5/CRN
L10	8442	SEA FILE=REGISTRY ABB=ON PLU=ON 89-32-7/CRN
L11	2	SEA FILE=REGISTRY ABB=ON PLU=ON L5 AND SRU
L13	795	SEA FILE=REGISTRY ABB=ON PLU=ON 10526-07-5/CRN
L14	225	SEA FILE=REGISTRY ABB=ON PLU=ON 105112-76-3/CRN
L15	36	SEA FILE=REGISTRY ABB=ON PLU=ON 500577-28-6/CRN
L16	13793	SEA FILE=REGISTRY ABB=ON PLU=ON L9 OR L10
L17	387	SEA FILE=REGISTRY ABB=ON PLU=ON L16 AND (L13 OR L14 OR L15)
L18	518	SEA FILE=HCAPLUS ABB=ON PLU=ON L11
L19	791	SEA FILE=HCAPLUS ABB=ON PLU=ON L17
L21	447	SEA FILE=HCAPLUS ABB=ON PLU=ON L19 (L) PREP/RL
L22	169	SEA FILE=HCAPLUS ABB=ON PLU=ON L21 (L) PREP/RL
L24	14	SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND METAL (3A) LAMINAT?
L25	78	SEA FILE=HCAPLUS ABB=ON PLU=ON L19 AND METAL (3A) LAMINAT?
L26	57	SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND METAL (3A) LAMINAT?
L27	23	SEA FILE=HCAPLUS ABB=ON PLU=ON L18 (L) METAL (3A) LAMINAT?
L28	48	SEA FILE=HCAPLUS ABB=ON PLU=ON L19 (L) METAL (3A) LAMINAT?
L29	49	SEA FILE=HCAPLUS ABB=ON PLU=ON L27 OR L28

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L30      13 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND PRP/RL
L31      38 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND PREP/RL
L32      49 SEA FILE=HCAPLUS ABB=ON PLU=ON (L29 OR L30 OR L31)
L33      27 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND (1840-2002)/PRY,AY
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L34      78 SEA FILE=HCAPLUS ABB=ON PLU=ON L24 OR L25 OR L26
L35      39 SEA FILE=HCAPLUS ABB=ON PLU=ON L34 AND (1840-2002)/PRY,AY
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L36      40 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 OR L35

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FILE 'HCAPLUS' ENTERED AT 13:18:31 ON 05 DEC 2008
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FILE COVERS 1907 - 5 Dec 2008 VOL 149 ISS 24
FILE LAST UPDATED: 4 Dec 2008 (20081204/ED)

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HCAplus now includes complete International Patent Classification (IPC) reclassification data for the third quarter of 2008.

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

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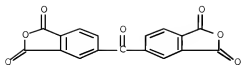
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L36 ANSWER 1 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2004:472785 HCAPLUS Full-text
DOCUMENT NUMBER: 141:24856
TITLE: Heat sink-equipped polyimide adhesive sheets with
        good heat moisture resistance for fixing lead
        frames
INVENTOR(S): Kobayashi, Masanao; Nakazawa, Masaki
PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
        CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

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PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004165270	A	20040610	JP 2002-326883	20021111

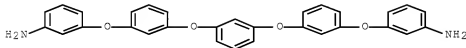
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RN 500577-35-5 HCAPLUS
 CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-[1,3-phenylenebis(oxy-3,1-phenyleneoxy)]bis[benzenamine] (9CI)
 (CA INDEX NAME)

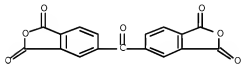
CM 1

CRN 500577-28-6
 CMF C30 H24 N2 O4



CM 2

CRN 2421-28-5
 CMF C17 H6 O7



IC ICM H01L023-50
 ICS C09J007-02; C09J179-08
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 56, 76
 IT 54953-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic
 dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 54571-76-5P
 116964-55-7P, 3,3',4,4'-Biphenyltetracarboxylic
 dianhydride-4,4'-bis(3-aminophenoxy)biphenyl copolymer 116964-65-9P
 500577-35-5P 500577-36-6P 698973-22-7P
 (adhesive layers; lead frame-fixing adhesive sheets comprising
 heat-sinking metal sheets and two of polyimide adhesive layers and
 showing good heat moisture resistance)

L36 ANSWER 2 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2004:414403 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 140:392151
 TITLE: Polyimide-metal foil laminate
 for printed circuit board
 INVENTOR(S): Otsubo, Eiji; Nakazawa, Oki; Tashiro, Masayuki;
 Tanabe, Kenji
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004142183	A	20040520	JP 2002-308194	20021023
			<--	
PRIORITY APPLN. INFO.:			JP 2002-308194	20021023
			<--	

ED Entered STN: 21 May 2004

AB The laminate with improved etchability and automatic inspection ability of surface appearance, uses the foil which is formed by electroplating and/or electroless plating and has surface 10-point average roughness (Rz) in the area in contact with the polyimide layer <1.0 µm and in the area of the opposite side ≤2.0 µm. Thus, Kapton 150EN (polyimide film) was coated with a polyamic acid solution [prepared from 1,3-bis(3-aminophenoxy)benzene and 3,3',4,4'-benzophenonetetracarboxylic acid dianhydride] for one side, dried to form a primary layer, coated with another polyamic acid solution [prepared from p-phenylenediamine, 4,4'-diaminodiphenyl ether, 3,3',4,4'-biphenyltetracarboxylic acid dianhydride, 4,4'-bis(3-aminophenoxy)biphenyl, and pyromellitic dianhydride] for the other side, dried, and heated to give a polyimide insulating film. An electrolytic Cu foil (Rz for polyimide side 0.9 µm, Rz for the opposite side 1.5 µm) was laminated on the primary layer side of the film and annealed to give a laminate showing peeling strength 0.8 kN/m.

IT 161359-81-SP, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl ether-p-phenylenediamine-pyromellitic dianhydride copolymer (insulating film layer; polyimide-metal foil laminate with improved etchability for printed circuit board)

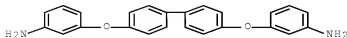
RN 161359-81-5 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 1,4-benzenediamine, [5,5'-biisobenzofuran]-1,1',3,3'-tetrone, 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis(benzenamine) and 4,4'-oxybis(benzenamine) (CA INDEX NAME)

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CRN 105112-76-3

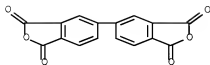
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CM 2

CRN 2420-87-3

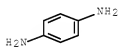
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CM 3

CRN 106-50-3

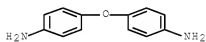
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CM 4

CRN 101-80-4

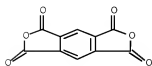
CMF C12 H12 N2 O



CM 5

CRN 89-32-7

CMF C10 H2 O6



IT 54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic acid dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 54571-76-5P 155912-62-2P,
 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-pyromellitic dianhydride copolymer
 (thermoplastic, insulating film metal foil side layer; polyimide-metal foil laminate with improved etchability for printed circuit board)

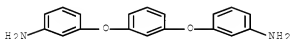
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

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CRN 10526-07-5

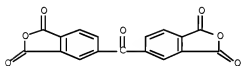
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CM 2

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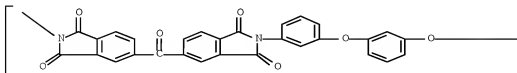
CMF C17 H6 O7

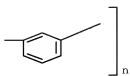


RN 54571-76-5 HCAPLUS

CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A

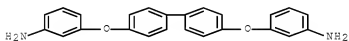




RN 155912-62-2 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 [5,5'-biisobenzofuran]-1,1',3,3'-tetrone and
 3,3'-[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] (9CI) (CA
 INDEX NAME)

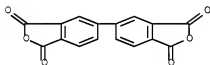
CM 1

CRN 105112-76-3
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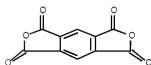
CM 2

CRN 2420-87-3
 CMF C16 H6 O6



CM 3

CRN 89-32-7
 CMF C10 H2 O6



- IC ICM B32B015-08
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 56, 76
- ST metal foil polyimide laminate printed circuit board; bisaminophenoxybenzene benzophenonetetracarboxylic dianhydride polyimide copper foil laminate
- IT Coating process
 (electroless, foil metal formed by; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Electrodeposition
 (foil metal formed by; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Polyketones
 (polyether-polyimide-, thermoplastic, insulating film metal foil side layer; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Polyimides, uses
 (polyether-polyketone-, thermoplastic, insulating film metal foil side layer; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Polyketones
 (polyimide-, thermoplastic, insulating film metal foil side layer; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Printed circuit boards
 (polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Polyimides, uses
 (polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Laminated plastics, uses
 Metals, uses
 (polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Polyethers, uses
 (polyimide-polyketone-, thermoplastic, insulating film metal foil side layer; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT Polyimides, uses
 (polyketone-, thermoplastic, insulating film metal foil side layer; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT 7440-02-0, Nickel, uses 7440-21-3, Silicon, uses 7440-47-3, Chromium, uses 7440-66-6, Zinc, uses
 (deposit on polyimide-side Cu foil surface; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT 7440-50-8, Copper, uses
 (foil; polyimide-metal foil laminate with improved etchability for printed circuit board)
- IT 361359-93-5P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl ether-p-phenylenediamine-pyromellitic dianhydride copolymer
 (insulating film layer; polyimide-metal foil laminate with improved etchability for printed circuit

board)
 IT 624739-59-9, Kapton 150EN
 (insulating film substrate; polyimide-metal foil laminate with improved etchability for printed circuit board)
 IT 28827-74-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3'-diaminobenzophenone copolymer 51518-44-6P
 54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 54571-76-5P 155912-62-2P,
 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-pyromellitic dianhydride copolymer
 (thermoplastic, insulating film metal foil side layer; polyimide-metal foil laminate with improved etchability for printed circuit board)

L36 ANSWER 3 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:402945 HCAPLUS Full-text

DOCUMENT NUMBER: 140:407829

TITLE: Polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling

INVENTOR(S): Kodama, Yoichi; Mori, Minehiro; Tashiro, Masayuki; Ohtsubo, Eiichi; Nakazawa, Naoki; Tanabe, Kenji

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1420048	A2	20040519	EP 2003-21627	20030925
EP 1420048	A3	20050921	<--	
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PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004209962	A	20040729	JP 2003-176439	20030620
			<--	
KR 2004030225	A	20040409	KR 2003-41377	20030625
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TW 248869	B	20060211	TW 2003-92117653	20030627
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CN 1485199	A	20040331	CN 2003-148387	20030630
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CN 1287980	C	20061206		
US 20040096679	A1	20040520	US 2003-671565	20030929
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PRIORITY APPLN. INFO.:			JP 2002-191779	A 20020701
			<--	
			JP 2002-330365	A 20021114
			<--	

ED Entered STN: 19 May 2004

AB The laminates comprises a polyimide resin layer containing a bismaleimide compound of (modified) polyphenylene type as heat resistance improver and a metal foil layer and are useful for lead-free soldering and chip-on-film packagings with freedom from pinholes and swelling when forming a Au-Sn bond

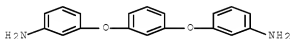
or Au-Au bond. Polyimide resin compns. for making the laminates are also provided which contain aromatic polyamic acids or/and polyimides. In an example, a polyamic acid derived from 1,3-bis(3-aminophenoxy)benzene and 3,3',4,4'-benzophenonetetracarboxylic dianhydride and containing 1,3-bis(3-maleimidophenoxy)benzene in dimethylacetamide was cast-coated on a Cu foil to give a laminate having the good claimed properties.

IT 54053-19-9F, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 54571-76-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer SRU
 105216-97-1P 105359-94-2P 110749-59-2F
 590577-35-5P
 (polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling)

RN 54053-19-9 HCAPLUS
 CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

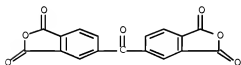
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CRN 10526-07-5
 CMF C18 H16 N2 O2

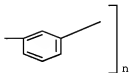
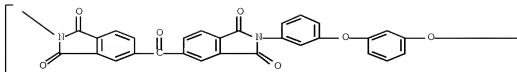


CM 2

CRN 2421-28-5
 CMF C17 H6 O7



RN 54571-76-5 HCAPLUS
 CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)



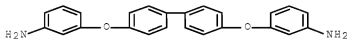
RN 105218-97-1 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] (CA INDEX
NAME)

CM 1

CRN 105112-76-3

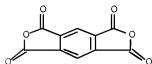
CMF C24 H20 N2 O2



CM 2

CRN 89-32-7

CMF C10 H2 O6

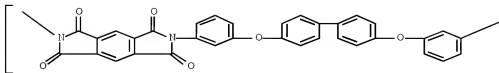


RN 105359-94-2 HCAPLUS

CN Poly[(5,7-dihydro-1,3,5,7-tetraoxobenzo[1,2-c:4,5-c']dipyrrole-
2,6(1H,3H)-diyl)-1,3-phenyleneoxy[1,1'-biphenyl]-4,4'-diyl]oxy-1,3-

phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

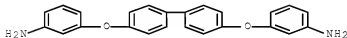


RN 110749-59-2 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

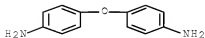
CMF C24 H20 N2 O2



CM 2

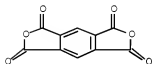
CRN 101-80-4

CMF C12 H12 N2 O



CM 3

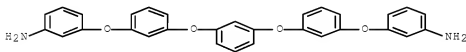
CRN 89-32-7
CMF C10 H2 O6



RN 500577-35-5 HCAPLUS
CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
3,3'-[1,3-phenylenebis(oxy-3,1-phenyleneoxy)]bis[benzenamine] (9CI)
(CA INDEX NAME)

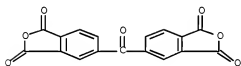
CM 1

CRN 500577-28-6
CMF C30 H24 N2 O4



CM 2

CRN 2421-28-5
CMF C17 H6 O7



IC ICM C08L079-08
ICS C09J179-08; C08G073-10; B32B015-08; B32B027-34
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56, 76
IT Polyimides, uses
(polyether-; polyimide-metal laminates with
good low-temperature adhesiveness and solder heat resistance and low
swelling)
IT Polyethers, uses
Polyketones
Polysulfones, uses

(polyimide-; polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling)

IT Adhesives
Heat-resistant materials
Laminated materials
Semiconductor devices
(polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling)

IT Polyimides, uses
(polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling)

IT Polyimides, uses
(polyketone-; polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling)

IT Polyimides, uses
(polysulfone-; polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling)

IT 3006-93-7, N,N'-m-Phenylenebismaleimide 13676-54-5,
Bis(4-maleimidophenyl)methane 54909-96-5,
1,3-Bis(3-maleimidophenoxy)benzene 606081-14-5
(adhesive improver; polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling)

IT 24980-39-0P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride; 4,4'-oxydianiline copolymer 24991-11-5P 28827-74-9P,
3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3'-diaminobenzophenone copolymer 51518-44-6P,
3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3'-diaminobenzophenone copolymer, SRU 54053-13-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 54571-76-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer SRU 58845-19-5P, 3,3'-Diaminobenzophenone-3,3',4,4'-diphenyl ether tetracarboxylic dianhydride copolymer 58845-24-2P 101407-39-0P,
3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-oxydianiline -p-phenylenediamine-Pyromellitic anhydride copolymer 105216-97-1P 105359-94-2P 110749-59-2P 590577-35-5P 500577-36-6P 689258-98-8P 689259-00-5P 689259-05-0P
(polyimide-metal laminates with good low-temperature adhesiveness and solder heat resistance and low swelling)

L36 ANSWER 4 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2004:351539 HCAPLUS Full-text
DOCUMENT NUMBER: 140:358515
TITLE: Pinhole-free metal-polyimide-polymer laminates with improved interlayer adhesion for printed circuit board
INVENTOR(S): Miyashita, Takehiro; Ota, Masayaa; Otsubo, Eiji; Mori, Minehiro; Okada, Satoshi
PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004130748	A	20040430	JP 2002-299753	20021015

PRIORITY APPLN. INFO.:	JP 2002-299753	20021015
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ED Entered STN: 30 Apr 2004

AB The laminate has (1) a thermoplastic polyimide layer having glass transition temperature 150-270° on at least one side of a polymer substrate and (2) a metal layer having thickness 1 nm to 1 μm on the polyimide layer. Thus, a polyamic acid solution prepared from 1,3-bis(3-aminophenoxy)benzene and 3,3',4,4'-biphenyltetracarboxylic acid was applied on Kapton 150EN (polyimide film) and heat-dried to give a laminate having a thermoplastic polyimide layer (glass transition temperature 195°), which was plasma-processed, precoated with Monel, and sputter deposition-coated with 250 nm-thick Cu to give a pinhole-free laminate.

IT 54953-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic acid dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 155912-62-2P 167857-87-6P,
 3,3',4,4'-Benzophenonetetracarboxylic acid dianhydride-3,3',4,4'-biphenyltetracarboxylic acid dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer (pinhole-free metal-thermoplastic polyimide-polymer substrate laminate with improved interlayer adhesion for printed circuit board)

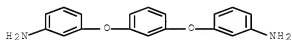
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

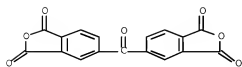
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

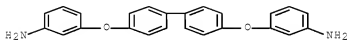
CMF C17 H6 O7



RN 155912-62-2 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 [5,5'-biisobenzofuran]-1,1',3,3'-tetrone and
 3,3'-[1,1'-biphenyl]-4,4'-diylbis(oxy)bis[benzenamine] (9CI) (CA
 INDEX NAME)

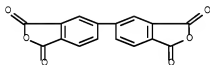
CM 1

CRN 105112-76-3
 CMF C24 H20 N2 O2



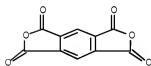
CM 2

CRN 2420-87-3
 CMF C16 H6 O6



CM 3

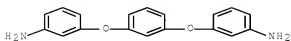
CRN 89-32-7
 CMF C10 H2 O6



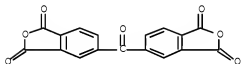
RN 167857-87-6 HCAPLUS
 CN [5,5'-Biisobenzofuran]-1,1',3,3'-tetrone, polymer with
 5,5'-carbonylbis[1,3-isobenzofurandione] and
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

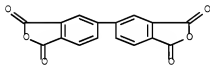
CRN 10526-07-5
CMF C18 H16 N2 O2



CM 2
CRN 2421-28-5
CMF C17 H6 O7



CM 3
CRN 2420-87-3
CMF C16 H6 O6



IC ICM B32B015-08
ICS C08G073-10
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56, 76
IT 28827-74-9P, 3,3',4,4'-Benzophenonetetracarboxylic acid
dianhydride-3,3',4,4'-biphenyltetracarboxylic acid 51518-44-6P
54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic acid
dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 54571-76-5P
72344-66-2P 155912-62-3P 167857-87-6P,
3,3',4,4'-Benzophenonetetracarboxylic acid
dianhydride-3,3',4,4'-biphenyltetracarboxylic acid
dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 463305-56-8P,
1,3-Bis(3-aminophenoxy)benzene-3,3',4,4'-biphenyltetracarboxylic acid
copolymer
(pinhole-free metal-thermoplastic polyimide-polymer substrate
laminates with improved interlayer adhesion for printed circuit

board)

L36 ANSWER 5 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2004:162259 HCAPLUS Full-text
 DOCUMENT NUMBER: 140:218897
 TITLE: Laminate for substrate of printed wiring board and preparation
 INVENTOR(S): Wang, Hongyuan; Abe, Yoshiko; Hiraishi, Katsufumi
 PATENT ASSIGNEE(S): Japan
 SOURCE: U.S. Pat. Appl. Publ., 7 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040038054	A1	20040226	US 2003-642136	20030818
JP 2004079826	A	20040311	JP 2002-238945	20020820
PRIORITY APPLN. INFO.:			JP 2002-238945	A 20020820

ED Entered STN: 29 Feb 2004

AB A laminate for a substrate of printed wiring board contains an insulating polyimide resin layer processible by wet etching with an aqueous solution of an alkali metal hydroxide. This laminate has a metal foil on one or both sides of the polyimide resin layer and ≥ 1 layer of the polyimide resin layer contains ≥ 5 mol% structural unit of trimellitic anhydride ester acid dianhydride having a segment derived from trimellitic acid anhydride and a segment derived from a bisphenol, and shows a rate of etching ≥ 2.0 $\mu\text{m}/\text{min}$ by a 30% aqueous solution of KOH kept at 80° to which 11% of ethylenediamine and 22% of ethylene glycol are added.

IT 663623-11-8P
 (laminate substrate of metal-clad base-etchable polyimide insulation layer)

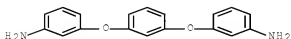
RN 663623-11-8 HCAPLUS

CN 5-Isobenzofurancarboxylic acid, 1,3-dihydro-1,3-dioxo-, [1,1'-biphenyl]-4,4'-diyl ester, polymer with 1,4-benzenediamine, 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

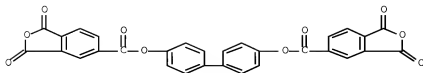
CRN 10526-07-5

CMF C18 H16 N2 O2



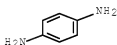
CM 2

CRN 10340-81-5
CMF C30 H14 O10



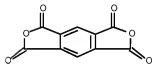
CM 3

CRN 106-50-3
CMF C6 H8 N2



CM 4

CRN 89-32-7
CMF C10 H2 O6



IC ICM B32B027-00

INCL 428473500

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 37, 76

IT Electric insulators

Printed circuit boards

(laminate substrate of metal-clad base-etchable
polyimide insulation layer)

IT Polyimides, uses

(laminate substrate of metal-clad base-etchable
polyimide insulation layer)

IT 7440-50-8, Copper, uses

(clad laminate; laminate substrate of
metal-clad base-etchable polyimide insulation layer)

IT 61041-05-2P 61041-12-1P 61131-91-7P 663623-09-4P 663623-10-7P
663623-11-8P 663623-12-9P 663623-13-0P 663623-14-1P

663623-15-2P 663623-16-3P 663623-17-4P 663947-80-6P
 663948-36-5P 663948-38-7P
 (laminated substrate of metal-clad base-etchable
 polyimide insulation layer)

L36 ANSWER 6 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:73707 HCAPLUS Full-text

DOCUMENT NUMBER: 140:129304

TITLE: Polyimide-metal laminate for
 chip-on-film used in inner lead bonding in tape
 automated bonding line

INVENTOR(S): Tashiro, Masayuki; Mori, Minehiro; Otsubo, Eiji;
 Tanabe, Kenji

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004025757	A	20040129	JP 2002-188817	20020628
			<--	
JP 2008279781	A	20081120	JP 2008-208512	20080813
			<--	
PRIORITY APPLN. INFO.:			JP 2002-188817	A3 20020628
			<--	

ED Entered STN: 29 Jan 2004

AB The laminate with good metal circuit image recognition through a polyimide layer, has a metal laminated on a thermoplastic polyimide layer on one side of ≥ 1 nonthermoplastic polyimide layer, wherein the metal surface bonded to the polyimide layer is not roughened and satisfies defined surface area ratio ≤ 1.0018 . Thus, Kapton 100EN (polyimide film) was coated with a polyamic acid solution prepared from 1,3-bis(3-aminophenoxy)benzene and 3,3',4,4'-benzophenonetetracarboxylic dianhydride for one side and dried to give a thermoplastic polyimide layer, coated with another polyamic solution for the other side and dried to give a nonthermoplastic layer, laminated with a Cu foil for the thermoplastic layer side, and annealed to give a flexible laminate showing light transmittance at 600 nm 67% when the surface area ratio is 1.0006.

IT 161359-81-5P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl ether-p-phenylenediamine-pyromellitic dianhydride copolymer (nonthermoplastic layer; polyimide-metal laminate for chip-on-film used in inner lead bonding in tape automated bonding line)

RN 161359-81-5 HCAPLUS

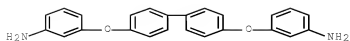
CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 1,4-benzenediamine, [5,5'-biisobenzofuran]-1,1',3,3'-tetrone, 3,3'-[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

CMF C24 H20 N2 O2

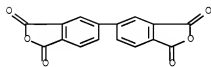
10/671,565



CM 2

CRN 2420-87-3

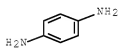
CMF C16 H6 O6



CM 3

CRN 106-50-3

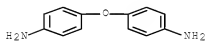
CMF C6 H8 N2



CM 4

CRN 101-80-4

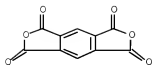
CMF C12 H12 N2 O



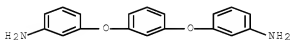
CM 5

CRN 89-32-7

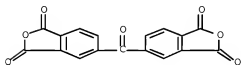
CMF C10 H2 O6



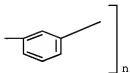
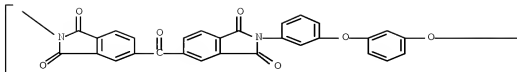
IT 54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 54571-76-5P
 (thermoplastic layer; polyimide-metal laminate for chip-on-film used in inner lead bonding in tape automated bonding line)
 RN 54053-19-9 HCAPLUS
 CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)
 CM 1
 CRN 10526-07-5
 CMF C18 H16 N2 O2



CM 2
 CRN 2421-28-5
 CMF C17 H6 O7



RN 54571-76-5 HCAPLUS
 CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)



- IC ICM B32B015-08
ICS H01L021-60
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56, 76
- ST polyimide copper foil laminate tape automated bonding; metal
polyimide laminate COF inner lead bonding
- IT Polyketones
(polyether-polyimide-, thermoplastic layer; polyimide-metal
laminate for chip-on-film used in inner lead bonding in
tape automated bonding line)
- IT Polyimides, uses
(polyether-polyketone-, thermoplastic layer; polyimide-
metal laminate for chip-on-film used in inner
lead bonding in tape automated bonding line)
- IT Laminated plastics, uses
Metals, uses
Polyimides, uses
(polyimide-metal laminate for chip-on-film used
in inner lead bonding in tape automated bonding line)
- IT Polyethers, uses
(polyimide-polyketone-, thermoplastic layer; polyimide-
metal laminate for chip-on-film used in inner
lead bonding in tape automated bonding line)
- IT 7440-50-8, FO-WS, uses
(foil, VLP; polyimide-metal laminate for
chip-on-film used in inner lead bonding in tape automated bonding
line)
- IT 25036-53-7, Kapton 100EN
(laminate component; polyimide-metal
laminate for chip-on-film used in inner lead bonding in
tape automated bonding line)
- IT 361359-81-5F, 3,3',4,4'-Biphenyltetracarboxylic
dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl
ether-p-phenylenediamine-pyromellitic dianhydride copolymer
(nonthermoplastic layer; polyimide-metal laminate
for chip-on-film used in inner lead bonding in tape automated
bonding line)
- IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 12597-68-1,

Stainless steel, uses
 (polyimide-metal laminate for chip-on-film used
 in inner lead bonding in tape automated bonding line)
 IT 54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic
 dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 54571-76-5P
 (thermoplastic layer; polyimide-metal laminate
 for chip-on-film used in inner lead bonding in tape automated
 bonding line)

L36 ANSWER 7 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:52673 HCAPLUS Full-text

DOCUMENT NUMBER: 140:129280

TITLE: Polyimide/metal laminated
 sheets, manufacture thereof, method for etching
 them using polyamide layers as etch stop, and hard
 disk suspensions therefrom
 INVENTOR(S): Hirota, Koji; Mori, Minehiro
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004017349	A	20040122	JP 2002-172730	20020613
			<--	

PRIORITY APPLN. INFO.:	JP 2002-172730	20020613
	<--	

ED Entered STN: 22 Jan 2004

AB The laminated sheets, comprising (A) core layers of nonthermoplastic polyimides, (B) thermoplastic polyimide layers (thickness 0.5-10 μm) on both side of A, and (C) stainless steel 304 foils on the both surface, are manufactured by (i) applying B or their precursor polyamic acid solns. on A, (ii) curing at 60-600°, and (iii) thermally bonding with C at 150-600°. The polyimide B are copolymers prepared from (a1) diamines chosen from 1,3-bis(3-aminophenoxy)benzene (I), 4,4'-bis(3-aminophenoxy)biphenyl, and/or and 3,3'-diaminobenzophenone and (a2) dianhydrides chosen from 3,3',4,4'-diphenyl ether tetracarboxylic dianhydride, 3,3',4,4'-benzophenone tetracarboxylic dianhydride (II), pyromellitic dianhydride, and/or 3,3',4,4'-biphenyltetracarboxylic dianhydride. Thus, a nonthermoplastic polyimide film (Kapton EN) was coated with I-II copolymer, dried at 295°, and laminated with stainless steel 304 foil (SUS 304HTA) at 240° to give a 5-layer laminate showing tensile modulus of the foil 350 GPa, peel strength 1.5 N/mm, and good processability in uniform etching.

IT 54053-19-9P, 3,3',4,4'-Benzophenone tetracarboxylic
 dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 54571-76-5P

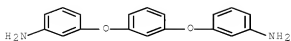
(thermoplastic layers; polyimide/metal laminated
 sheets for manufacturing hard disk suspensions by etching using polyimide
 layers as etch stop)

RN 54053-19-9 HCAPLUS

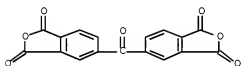
CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5
CMF C18 H16 N2 O2

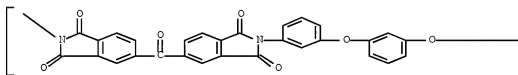


CM 2
CRN 2421-28-5
CMF C17 H6 O7

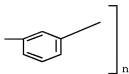


RN 54571-76-5 HCAPLUS
CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM B32B015-08
ICS G11B021-21
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 55, 74

- IT Magnetic disks
(hard, suspensions; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT Polyimides, uses
(polyether-, nonthermoplastic core layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT Polyketones
(polyether-polyimide-, thermoplastic layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT Polyimides, uses
(polyether-polyketone-, thermoplastic layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT Polyethers, uses
(polyimide-, nonthermoplastic core layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT Polyethers, uses
(polyimide-polyketone-, thermoplastic layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT Etch stops
Laminated materials
(polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT Polyimides, uses
(polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT 25038-81-7
(assumed monomers, nonthermoplastic core layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT 25036-53-7, Kapton EN
(nonthermoplastic core layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT 128280-59-1, Apical NPI
(nonthermoplastic layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT 11109-50-5 37246-01-8, JIS SUS 304HTA
(polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)
- IT 54953-19-3P, 3,3',4,4'-Benzophenone tetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
54571-76-5P
(thermoplastic layers; polyimide/metal laminated sheets for manufacturing hard disk suspensions by etching using polyimide layers as etch stop)

laminated sheet with good heat resistance
for lead frames

INVENTOR(S): Kobayashi, Masanao; Mori, Minehiro; Kodama, Yoichi
PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003332510	A	20031121	JP 2002-139672	20020515

PRIORITY APPLN. INFO.:	JP 2002-139672	20020515
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ED Entered STN: 21 Nov 2003

AB Title laminate consists of a metal plate, and a thermoplastic polyimide adhesive layer derived from 1,3-bis(3-aminophenoxy)benzene (APB) and 3,3',4,4'-benzophenonetetracarboxylic dianhydride (BTDA), where the mol ratio of BTDA to APB = 0.900-0.998. Thus, a copper-clad laminate was prepared by coating one side of a copper foil (SLP 105WB) with 3,3',4,4'-benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer.

IT 54653-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
54571-76-5P 167857-87-6P,
3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3',4,4'-biphenyltetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
(production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)

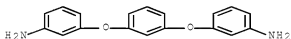
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

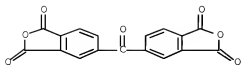
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

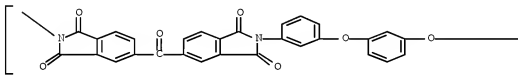
CMF C17 H6 O7



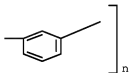
RN 54571-76-5 HCAPLUS

CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



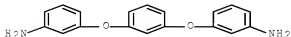
RN 167857-87-6 HCAPLUS

CN [5,5'-Biisobenzofuran]-1,1',3,3'-tetrone, polymer with 5,5'-carbonylbis[1,3-isobenzofurandione] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

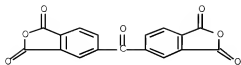
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

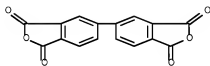
CMF C17 H6 O7



CM 3

CRN 2420-87-3

CMF C16 H6 O6



- IC ICM H01L023-50
ICS C09J007-02; C09J179-08
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- ST thermoplastic polyimide metal laminate sheet lead frame
- IT Polyketones
(polyamic acid-polyether-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyethers, uses
(polyamic acid-polyketone-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyketones
(polyether-polyimide-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyamic acids
Polyimides, uses
(polyether-polyketone-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyethers, uses
(polyimide-polyketone-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Adhesive tapes
Adhesives
Lead frames
Printed circuit boards

- (production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Laminated plastics, uses
(production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Metals, miscellaneous
(substrate; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT 7440-50-8, BHY 22B-T, miscellaneous
(foil, SLP 105WB, F 1WS, substrate; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT 37246-01-8, SUS 304H-TA 625112-41-6, SUS 301EH-TA
(foil, SUS 301EH-TA, SUS 304H-TA, substrate; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT 54653-19-9F, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 54571-76-5P 59113-58-5P 167857-87-6P,
3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3',4,4'-biphenyltetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
(production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT 7429-90-5, Aluminum, miscellaneous 7440-02-0, Nickel, miscellaneous
(substrate; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)

L36 ANSWER 9 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:906156 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 139:382440

TITLE: Thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames

INVENTOR(S): Kobayashi, Masanao; Mori, Minehiro; Kodama, Yoichi

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003327931	A	20031119	JP 2002-138107	20020514

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PRIORITY APPLN. INFO.: JP 2002-138107 20020514

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ED Entered STN: 19 Nov 2003

AB Title laminate comprises in the order of a metal plate, non-thermoplastic polyimide film, and thermoplastic polyimide adhesive layer derived from 1,3-bis(3-aminophenoxy)benzene (ABP) and 3,3',4,4'-benzophenonetetracarboxylic dianhydride (BTDA), where the mol ratio of BTDA to ABP = 0.900-0.998. Thus, a copper clad laminate was prepared by coating one side of a copper foil (SLP 105WB) with (I) 3,3',4,4'-biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-oxydianiline-p-phenylenediamine-pyromellitic dianhydride copolymer and (II) 3,3',4,4'-benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer.

IT 5453-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 54571-76-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer, sru
 361359-91-5P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-oxydianiline-p-phenylenediamine-pyromellitic dianhydride copolymer
 167857-87-6P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3',4,4'-biphenyltetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 (production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)

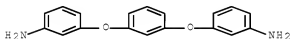
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

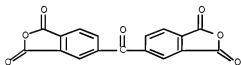
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

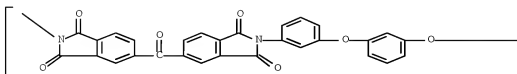
CMF C17 H6 O7

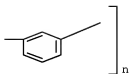


RN 54571-76-5 HCAPLUS

CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



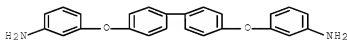


RN 161359-81-5 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 1,4-benzenediamine, [5,5'-biisobenzofuran]-1,1',3,3'-tetrone,
 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

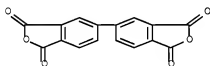
CMF C24 H20 N2 O2



CM 2

CRN 2420-87-3

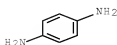
CMF C16 H6 O6



CM 3

CRN 106-50-3

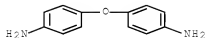
CMF C6 H8 N2



CM 4

CRN 101-80-4

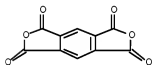
CMF C12 H12 N2 O



CM 5

CRN 89-32-7

CMF C10 H2 O6



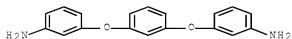
RN 167857-87-6 HCAPLUS

CN [5,5'-Biisobenzofuran]-1,1',3,3'-tetrone, polymer with
 5,5'-carbonylbis[1,3-isobenzofurandione] and
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

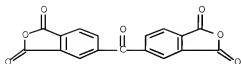
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

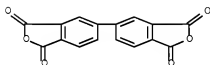
CMF C17 H6 O7



CM 3

CRN 2420-87-3

CMF C16 H6 O6



- IC ICM C09J007-02
ICS C09J179-08; H01L023-50
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- IT Polyketones
(polyamic acid-polyether-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyethers, uses
(polyamic acid-polyketone-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyketones
(polyether-polyimide-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyamic acids
(polyether-polyketone-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyimides, uses
(polyether-polyketone-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Polyethers, uses
(polyimide-polyketone-; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Adhesive tapes
Lead frames
Printed circuit boards
(production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT Laminated plastics, uses

- (production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT 7440-50-8, SLP 105WB, miscellaneous
(foil, BHY 22B-T, F 1WS, substrate; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT 37246-01-8, SUS 304H-TA 625112-41-6, Iron alloy, (JIS SUS 301EH)
(foil, SUS 301EH-TA, SUS 304H-TA, substrate; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT 54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 54571-76-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer, sru 59113-58-5P 161359-81-5P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-oxydianiline-p-phenylenediamine-pyromellitic dianhydride copolymer 167857-87-6P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3',4,4'-biphenyltetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer (production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)
- IT 7429-90-5, Aluminum, miscellaneous 7440-02-0, Nickel, miscellaneous (substrate; production of thermoplastic polyimide-metal laminate sheet with good heat resistance for lead frames)

L36 ANSWER 10 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

2003:889904 HCAPLUS Full-text

DOCUMENT NUMBER:

139:365806

TITLE:

Bismaleimide compound-containing polyimide resin composition and its applications

INVENTOR(S):

Kodama, Yoichi; Mori, Minehiro

PATENT ASSIGNEE(S):

Mitsui Chemicals Inc., Japan

SOURCE:

Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003321608	A	20031114	JP 2002-128966	20020430
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JP 3999032	B2	20071031		
JP 2007283773	A	20071101	JP 2007-158897	20070615
			<--	
PRIORITY APPLN. INFO.:			JP 2002-128966	A3 20020430
			<--	

ED Entered STN: 14 Nov 2003

AB Polyimide resin composition with good adhesive property at low temperature and high moisture-resistance, which is ideal for heat-resistant adhesive, is composed of 70-99 weight% polyimide that is prepared from an aromatic diamine and a tetracarboxylic anhydride, and 1-30 weight% bismaleimide compds. Polyimide films, adhesive insulating tapes, and metal laminates can be prepared from the above polyimide composition. Thus, 1,3-bis(3-(3-aminophenoxy)phenoxy)benzene, N,N-dimethylacetamide, and 3,3',4,4'-benzophenone tetracarboxylic anhydride were polymerized and mixed with 10 weight% 1,3-bis(3-maleimidephenoxy)benzene (APB BMI) to receive a polyamic acid solution, which was cast and cyclodehydrated on glass plate to obtain

polyimide film, or cast and cyclodehydrated on copper foil to provide a metal laminate.

IT 500577-35-5P

(bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

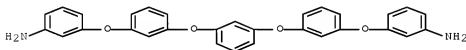
RN 500577-35-5 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy-3,1-phenyleneoxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 500577-28-6

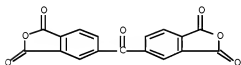
CMF C30 H24 N2 O4



CM 2

CRN 2421-28-5

CMF C17 H6 O7



IC ICM C08L079-08

ICS B32B015-08; C08G073-10; C08J005-18; C08K005-3415; C09J007-02; C09J179-08

CC 37-6 (Plastics Manufacture and Processing)

Section cross-reference(s): 38

ST bismaleimide polyimide film adhesive insulation tape metal laminate; bisaminophenoxyphenoxybenzene dimethylacetamide benzophenone tetracarboxylic anhydride polyamic acid polyimide bismaleimidephenoxybenzene

IT Electric insulators

(adhesive tapes; bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT Plastic films (bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT Polyimides, preparation
(bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT Polyamic acids
(bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT Adhesive tapes
(dielec.; bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT Laminated materials
(metal-plastic; bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT 606081-14-5, APPB-BMI
(APPB-BMI; bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT 500577-35-5P 500577-36-6P
(bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT 13676-54-5D, Bismaleimides, derivs. 54909-96-5, APB-BMI
(bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

IT 7440-50-8, Copper, uses
(substrate; bismaleimide compound-containing polyimide resin composition for metal laminates, adhesive insulation tapes, and films)

L36 ANSWER 11 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:646649 HCAPLUS Full-text

DOCUMENT NUMBER: 139:181148

TITLE: Metal-thermoplastic polyimide laminate with good low-temperature bondability and solder heat resistance

INVENTOR(S): Kodama, Yoichi; Mori, Minehiro

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

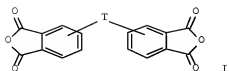
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003231208	A	20030819	JP 2002-28244	20020205
			<--	
JP 4190770	B2	20081203		
PRIORITY APPLN. INFO.:			JP 2002-28244	20020205
			<--	

ED Entered STN: 19 Aug 2003

GI



AB The laminate for semiconductor packages, etc., has a layer of thermoplastic polyimides prepared from diamines containing 1,3-bis(3-(3-aminophenoxy)phenoxy)benzene a, $\text{H}_2\text{NR}_1\text{SiR}_3\text{R}_4(\text{OSiR}_5\text{R}_6)\text{mR}_2\text{NH}_2$ (R_1, R_2 = divalent C1-4 aliphatic or aromatic; $\text{R}_3\text{-R}_6$ = monovalent aliphatic or aromatic; $m = 1\text{-}20$) b, and other diamines c mol and acid dianhydrides containing d mol of dianhydrides I ($\text{T} = \text{CO}, \text{COC}_6\text{H}_4\text{CO}, \text{OC}_6\text{H}_4\text{COC}_6\text{H}_4\text{O}$) and e mol of other dianhydrides while satisfying $(a + b)/(a + b + c) = 0.5\text{-}1.0$; $0 < a/(a + b) < 1.0$; $0 < d/(d + e) \leq 1.0$; and $0.9 \leq (d + e)/(a + b + c) < 1.0$. Thus, 1,3-bis(3-(3-aminophenoxy)phenoxy)benzene 0.0100, BY 16-871EG (diaminosiloxane), and 3,3',4,4'-benzophenonetetracarboxylic dianhydride were reacted to give a polyamic acid solution, which was cast on SLP 18 (Cu foil) and heated to give a polyimide-Cu laminate. The laminate was press-bonded at 150° with another Cu foil to give a test piece showing 90° -peeling strength 1.52 kg/cm.

IT 578730-72-0P 578730-73-1P
(metal/thermoplastic polyimide-polysiloxane
laminate with good low-temperature bondability and solder heat
resistance)

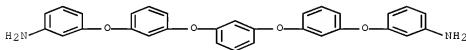
RN 578730-72-0 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 α -[(3-aminopropyl)dimethylsilyl]- ω -[[3-aminopropyl)dimethylsilyl]oxy]poly[oxy(dimethylsilylene)] and
3,3'-[1,3-phenylenebis(oxy-3,1-phenyleneoxy)]bis[benzenamine], block
(9CI) (CA INDEX NAME)

CM 1

CRN 500577-28-6

CMF C30 H24 N2 O4

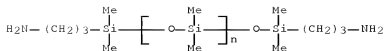


CM 2

CRN 97917-34-5

CMF $(\text{C}_2 \text{H}_6 \text{O Si})_n \text{C}_{10} \text{H}_{28} \text{N}_2 \text{O Si}_2$

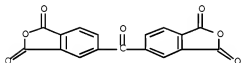
CCI PMS



CM 3

CRN 2421-28-5

CMF C17 H6 O7



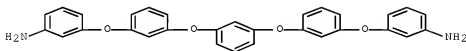
RN 578730-73-1 HCAPLUS

CN 5-Isobenzofurancarboxylic acid, 1,3-dihydro-1,3-dioxo-, 1,2-ethanediyl ester, polymer with α -[(3-aminopropyl)dimethylsilyl]- ω -[[[(3-aminopropyl)dimethylsilyl]oxy]poly[oxy(dimethylsilylene)], 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine], 5,5'-carbonylbis[1,3-isobenzofurandione] and 3,3'-[1,3-phenylenebis(oxy-3,1-phenyleneoxy)]bis[benzenamine] (9CI)
(CA INDEX NAME)

CM 1

CRN 500577-28-6

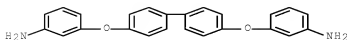
CMF C30 H24 N2 O4



CM 2

CRN 105112-76-3

CMF C24 H20 N2 O2

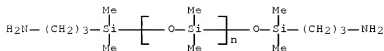


CM 3

CRN 97917-34-5

CMF (C2 H6 O Si)_n C10 H28 N2 O Si2

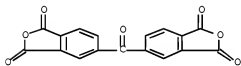
CCI PMS



CM 4

CRN 2421-28-5

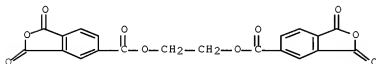
CMF C17 H6 O7



CM 5

CRN 1732-96-3

CMF C20 H10 O10



IC ICM B32B015-08

ICS C08G073-10

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 56, 76

ST metal thermoplastic polyimide laminate adhesive
 semiconductor package; bisaminophenoxyphenoxybenzene diaminosiloxane
 benzophenonetetracarboxylic dianhydride polyimide laminate; copper
 foil thermoplastic polyimide polysiloxane laminate

IT Adhesive films

Electronic packaging materials

(metal/thermoplastic polyimide-polysiloxane laminate with good low-temperature bondability and solder heat resistance)

IT Laminated plastics, uses

Metals, uses

(metal/thermoplastic polyimide-polysiloxane laminate with good low-temperature bondability and solder heat resistance)

IT Polysiloxanes, uses

(polyether-polyimide-; metal/thermoplastic polyimide-polysiloxane laminate with good low-temperature bondability and solder heat resistance)

IT Polyimides, uses

(polyether-siloxane-; metal/thermoplastic polyimide-polysiloxane laminate with good low-temperature bondability and solder heat resistance)

IT Polyethers, uses

(polyimide-siloxane-; metal/thermoplastic polyimide-polysiloxane laminate with good low-temperature bondability and solder heat resistance)

IT 2469-55-8P

(BY 16-871EG, polymers with bisaminophenoxyphenoxybenzene and acid dianhydrides; metal/thermoplastic polyimide-polysiloxane laminate with good low-temperature bondability and solder heat resistance)

IT 7440-50-8, SLP 18, uses

(foil; metal/thermoplastic polyimide-polysiloxane laminate with good low-temperature bondability and solder heat resistance)

IT 2421-28-5DP, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride, polymers with bisaminophenoxyphenoxybenzene and diaminosiloxanes 500577-6DP, polymers with diaminosiloxanes and acid dianhydrides 578730-72-8P 578730-73-1P

(metal/thermoplastic polyimide-polysiloxane laminate with good low-temperature bondability and solder heat resistance)

L36 ANSWER 12 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:460356 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 139:37596

TITLE: Metal-polyimide laminate with good low-temperature adhesion and solder heat resistance

INVENTOR(S): Kodama, Yoichi; Mori, Minehiro

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

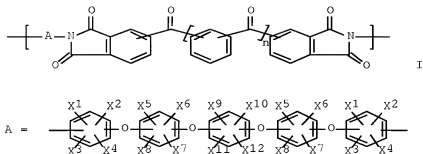
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----		-----	-----	-----
JP 2003170528	A	20030617	JP 2001-369566	20011204
			<--	
JP 4052828	B2	20080227		
PRIORITY APPLN. INFO.:			JP 2001-369566	20011204
			<--	

ED Entered STN: 17 Jun 2003

GI



AB The laminate for semiconductor packaging, has a layer containing thermoplastic polyimides having repeating units I (X1-X12 = H, hydrocarbyl; n = 0, 1) on at least one side of a metal foil. Thus, a polyamic acid solution prepared from 1,3-bis(3-(3-aminophenoxy)phenoxy)benzene and 3,3',4,4'-benzophenonetetracarboxylic dianhydride was cast on SLP 105WB (Cu foil) and heated to give a laminate, which was hot-pressed with 42 Alloy at 200° to give a test piece showing 90°-peeling strength 2.34 kg/cm.

IT 500577-35-5P

(metal foil-polyoxyarylene-polyimide laminate
with good low-temperature adhesion and solder heat resistance for
semiconductor packaging)

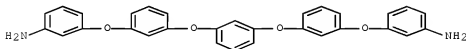
RN 500577-35-5 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
3,3'-[1,3-phenylenebis(oxy-3,1-phenyleneoxy)]bis[benzenamine] (9CI)
(CA INDEX NAME)

CM 1

CRN 500577-28-6

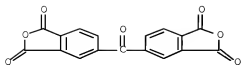
CMF C30 H24 N2 O4



CM 2

CRN 2421-28-5

CMF C17 H6 O7



- IC ICM B32B015-08
ICS B32B027-34; C08G073-10
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 55, 56, 76
- ST metal polyoxyarylene polyimide laminate
semiconductor packaging; copper foil bisaminophenoxyphenoxybenzene
benzophenonetetracarboxylic dianhydride copolymer laminate
- IT Electronic packaging materials
Laminated plastic films
(metal foil-polyoxyarylene-polyimide laminate
with good low-temperature adhesion and solder heat resistance for
semiconductor packaging)
- IT Foils
(metal; metal foil-polyoxyarylene-polyimide
laminate with good low-temperature adhesion and solder heat
resistance for semiconductor packaging)
- IT Polyketones
(polyether-polyimide-; metal
foil-polyoxyarylene-polyimide laminate with good
low-temperature adhesion and solder heat resistance for semiconductor
packaging)
- IT Polyimides, uses
(polyether-polyketone-; metal
foil-polyoxyarylene-polyimide laminate with good
low-temperature adhesion and solder heat resistance for semiconductor
packaging)
- IT Polyethers, uses
(polyimide-polyketone-; metal
foil-polyoxyarylene-polyimide laminate with good
low-temperature adhesion and solder heat resistance for semiconductor
packaging)
- IT 7440-50-8, Copper, uses
(foil, SLP 105WB; metal foil-polyoxyarylene-polyimide
laminate with good low-temperature adhesion and solder heat
resistance for semiconductor packaging)
- IT 12725-26-7, SUS 301
(foil; metal foil-polyoxyarylene-polyimide
laminate with good low-temperature adhesion and solder heat
resistance for semiconductor packaging)
- IT 500577-35-5P 500577-36-6P
(metal foil-polyoxyarylene-polyimide laminate
with good low-temperature adhesion and solder heat resistance for
semiconductor packaging)

L36 ANSWER 13 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:349017 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 138:354889

TITLE: Polyimide-metal foil laminate

and its manufacture for wiring board
INVENTOR(S): Hirota, Koji; Mori, Minehiro; Otsubo, Eiji;
Kobayashi, Masanao; Tashiro, Masayuki

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003127276	A	20030508	JP 2001-325721	20011024
			<--	
PRIORITY APPLN. INFO.:			JP 2001-325721	20011024
			<--	

ED Entered STN: 08 May 2003

AB The laminate with improved etchability of the metal foil, is manufactured by coating at least one side of a nonthermoplastic polyimide layer with a varnish of thermoplastic polyimides or their precursors, drying and curing at 60-600°, and hot-pressing a glossy metal foil on the resulting thermoplastic resin layer at 150-600°, wherein the surface of the metal foil is not roughened. Thus, a polyamic acid varnish prepared from 1,3-bis(3-aminophenoxy)benzene and 3,3',4,4'-benzophenonetetracarboxylic dianhydride was applied on Kapton EN (polyimide film) and dried to give a thermoplastic layer, on which FO-WS (Cu foil, maximum surface roughness 1.3 µm) was heat-bonded to give a laminate showing high etching factor and peeling strength 1.0 kg/cm.

IT 54053-19-9F, 1,3-Bis(3-aminophenoxy)benzene-3,3',4,4'-benzophenonetetracarboxylic dianhydride copolymer 54571-76-5P (nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)

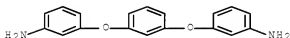
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

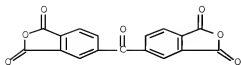
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

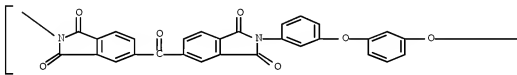
CMF C17 H6 O7



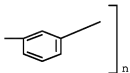
RN 54571-76-5 HCAPLUS

CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



- IC ICM B32B015-08
ICS H05K001-03; H05K001-09; H05K003-00
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56, 76
- ST polyimide metal foil laminate wiring board
etching; copper foil bisaminophenoxybenzene
benzophenonetetracarboxylic dianhydride polyimide laminate
- IT Foils
Lamination
Printed circuit boards
(nonthermoplastic polyimide-thermoplastic polyimide-glossy
metal foil laminate with improved etchability and
its manufacture for wiring board)
- IT Laminated plastics, uses
Metals, uses
Polyimides, uses
(nonthermoplastic polyimide-thermoplastic polyimide-glossy
metal foil laminate with improved etchability and
its manufacture for wiring board)
- IT Polyimides, uses
(polyether-; nonthermoplastic polyimide-thermoplastic
polyimide-glossy metal foil laminate with
improved etchability and its manufacture for wiring board)

- IT Polyketones
(polyether-polyimide-; nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)
- IT Polyimides, uses
(polyether-polyketone-; nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)
- IT Polyethers, uses
(polyimide-; nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)
- IT Polyethers, uses
(polyimide-polyketone-; nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)
- IT Aluminum alloy, nonbase
Nickel alloy, nonbase
(foil; nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)
- IT 7440-50-8, Copper, uses
(foil, F 0WS; nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)
- IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 12597-68-1, Stainless steel, uses 129847-71-8, C 7025
(foil; nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)
- IT 54053-19-9P, 1,3-Bis(3-aminophenoxy)benzene-3,3',4,4'-benzophenonetetracarboxylic dianhydride copolymer 54571-76-5P
(nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)
- IT 25036-53-7, Kapton EN 25038-81-7D, assumed monomers 128280-59-1, Apical NPI
(nonthermoplastic polyimide-thermoplastic polyimide-glossy metal foil laminate with improved etchability and its manufacture for wiring board)

L36 ANSWER 14 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:802289 HCAPLUS Full-text

DOCUMENT NUMBER: 137:311984

TITLE: Polyimide-metal foil laminates and production method thereof

INVENTOR(S): Hirota, Koji; Tashiro, Masayuki; Kobayashi, Masanao; Otsubo, Eiichi; Mori, Minehiro

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002307609	A	20021023	JP 2001-116028	20010413
			<--	

PRIORITY APPLN. INFO.:

JP 2001-116028

20010413

<--

ED Entered STN: 23 Oct 2002

AB The laminates especially useful for flexible printed circuit boards are manufactured by forming a thermoplastic polyimide layer (A) on a polyimide film (B), and laminating the resulting film with a metal foil (C), wherein ≥ 0.17 mg/dm² of Ni is deposited on the metal surface which is laminated with A layer. Thus, a C/A/B laminate containing Cu foil (Ni deposition 0.22 mg/dm²), 3,3',4,4'-benzophenonetetracarboxylic acid dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer layer, and a polyimide film (Kapton EN) was manufactured and showed peel strength 1.8 kg/cm and no microvoids on the surface.

IT 54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic acid dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
54571-76-5P 161359-81-5P,
3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-oxydianiline-p-phenylenediamine-pyromellitic dianhydride copolymer
(polyimide-metal foil laminates with good interlayer adhesion and manufacture method)

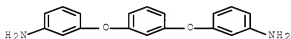
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

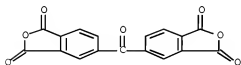
CMF C18 H16 N2 O2



CM 2

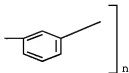
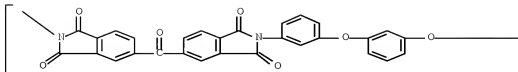
CRN 2421-28-5

CMF C17 H6 O7



RN 54571-76-5 HCAPLUS

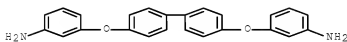
CN Poly[(1,3-dihydro-1,3-dioxo-2H-isindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)



RN 161359-81-5 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 1,4-benzenediamine, [5,5'-biisobenzofuran]-1,1',3,3'-tetrone,
 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 4,4'-oxybis[benzenamine] (CA INDEX NAME)

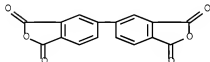
CM 1

CRN 105112-76-3
 CMF C24 H20 N2 O2



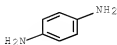
CM 2

CRN 2420-87-3
 CMF C16 H6 O6



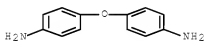
CM 3

CRN 106-50-3
CMF C6 H8 N2



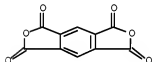
CM 4

CRN 101-80-4
CMF C12 H12 N2 O



CM 5

CRN 89-32-7
CMF C10 H2 O6



- IC ICM B32B015-08
ICS B32B015-08; C08G073-10; H05K001-03; H05K003-00; H05K003-38
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
ST thermoplastic polyimide film copper laminate; flexible printed circuit board polyimide metal laminate
IT Printed circuit boards
(flexible; polyimide-metal foil laminates with good interlayer adhesion for printed circuit boards)
IT Polyimides, uses
(polyether-; polyimide-metal foil laminates with good interlayer adhesion and manufacture method)
IT Polyketones
(polyether-polyimide-; polyimide-metal foil laminates with good interlayer adhesion and manufacture method)
IT Polyimides, uses
(polyether-polyketone-; polyimide-metal foil

Laminates with good interlayer adhesion and manufacture method)

IT Polyethers, uses
(polyimide-; polyimide-metal foil laminates
with good interlayer adhesion and manufacture method)

IT laminated plastics, uses
(polyimide-metal foil laminates with good
interlayer adhesion and manufacture method)

IT Polyethers, uses
(polyimide-polyketone-; polyimide-metal foil
laminates with good interlayer adhesion and manufacture method)

IT 7440-50-8, Copper, uses
(foil, F 1WS; polyimide-metal foil laminates
with good interlayer adhesion and manufacture method)

IT 54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic acid
dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
54571-76-5P 161359-81-5P,
3,3',4,4'-Biphenyltetracarboxylic
dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-oxydianiline-p-
phenylenediamine-pyromellitic dianhydride copolymer
(polyimide-metal foil laminates with good
interlayer adhesion and manufacture method)

IT 25036-53-7, Kapton EN 25038-81-7 128280-59-1, Apical NPI
(polyimide-metal foil laminates with good
interlayer adhesion and manufacture method)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 12597-68-1,
Stainless steel, uses 129847-71-8, C 7025
(polyimide-metal foil laminates with good
interlayer adhesion and manufacture method)

L36 ANSWER 15 OF 40 HCAPLUS COPYRIGHT 2008 ACS ON STN

ACCESSION NUMBER:

2002:637597 HCAPLUS Full-text

DOCUMENT NUMBER:

137:170702

TITLE:

Polyimide and metal foil
laminates for flexible printed circuit
board substrate and process for producing the same
Okamura, Kazuto; Taguchi, Kazutoshi; Ohmizo,
Kazunori; Shimose, Makoto

INVENTOR(S):

PATENT ASSIGNEE(S):

SOURCE: PCT Int. Appl., 41 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT:

1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002064363	A1	20020822	WO 2002-JP1317	20020215
			<--	
W: CN, ID, KR, US				
JP 2002240193	A	20020828	JP 2001-40828	20010216
			<--	
CN 1527763	A	20040908	CN 2002-805812	20020215
			<--	
CN 1260062	C	20060621		
US 20040067349	A1	20040408	US 2003-467463	20031117
			<--	
US 7338716	B2	20080304		
PRIORITY APPLN. INFO.:			JP 2001-40828	A 20010216
			<--	

ED Entered STN: 23 Aug 2002

AB A laminate comprises ≥ 1 layer of an insulating polyimide having a coefficient of linear thermal expansion (CTE) of $30 \times 10^{-6}/^{\circ}\text{C}$, ≥ 1 layer of a polyimide having $T_g < 300^{\circ}$ and having adhesion $> 0.5 \text{ kN/m}$ with a metal foil, and a metal foil, wherein the insulating layer has an average rate of etching of $> 0.5 \text{ /m/min}$ at 50 weight% aqueous KOH and at 80° . Thus, a laminate was made by coating and curing a polyimide precursor of 1,3-bis(3-aminophenoxy)benzene-pyromellitic anhydride (I)-3,4,3',4'-benzophenonetetracarboxylic acid dianhydride copolymer on a stretched Cu foil, applying and curing a precursor of 4,4'-diamino-2'-methoxybenzanilide-4,4'-diaminodiphenyl ether-I copolymer on the 1st layer of the cured polyimide layer, and laminating a top layer of Cu foil.

IT 151958-39-3P, 3,4,3',4'-Benzophenonetetracarboxylic acid dianhydride-1,3-bis(3-aminophenoxy)benzene-pyromellitic anhydride copolymer 447404-72-0P 447404-76-4P 447404-78-6P

(polyimide and metal foil laminate for flexible printed circuit board substrate and process for producing the same)

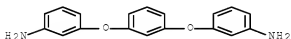
RN 151958-39-3 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 5,5'-carbonylbis[1,3-isobenzofurandione] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

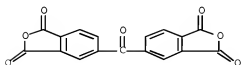
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

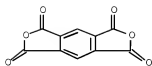
CMF C17 H6 O7



CM 3

CRN 89-32-7

CMF C10 H2 O6

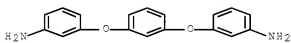


RN 447404-72-0 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 1,4-benzenediamine, 5,5'-carbonylbis[1,3-isobenzofurandione] and
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

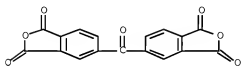
CMF C18 H16 N2 O2



CM 2

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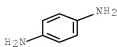
CMF C17 H6 O7



CM 3

CRN 106-50-3

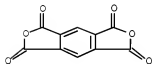
CMF C6 H8 N2



CM 4

CRN 89-32-7

CMF C10 H2 O6



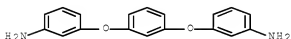
RN 447404-76-4 HCAPLUS

CN 5-Isobenzofurancarboxylic acid, 1,3-dihydro-1,3-dioxo-, 1,2-ethanediyl ester, polymer with 1,4-benzenediamine, 1H,3H-benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

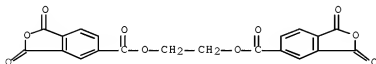
CMF C18 H16 N2 O2



CM 2

CRN 1732-96-3

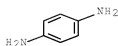
CMF C20 H10 O10



CM 3

CRN 106-50-3

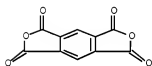
CMF C6 H8 N2



CM 4

CRN 89-32-7

CMF C10 H2 O6



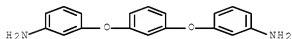
RN 447404-78-6 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
1,4-benzenediamine, 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] and
5,5'-sulfonylbis[1,3-isobenzofurandione] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

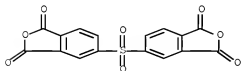
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CM 2

CRN 2540-99-0

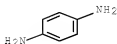
CMF C16 H6 O8 S



CM 3

CRN 106-50-3

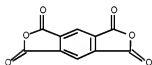
CMF C6 H8 N2



CM 4

CRN 89-32-7

CMF C10 H2 O6



- IC ICM B32B015-08
ICS H05K001-03
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- IT Printed circuit boards
(flexible; polyimide and metal foil laminate
for flexible printing substrate and process for producing the same)
- IT Polymerization
(polyimide and metal foil laminate for flexible
printing substrate and process for producing the same)
- IT Laminated plastics, uses
Polyimides, uses
(polyimide and metal foil laminate for flexible
printing substrate and process for producing the same)
- IT 7440-50-8, Copper, uses
(foil; polyimide and metal foil laminate for
flexible printing substrate and process for producing the same)
- IT 31975-60-7P, p-Phenylenediamine-4,4'-diaminodiphenyl
ether-pyromellitic anhydride copolymer 106128-03-4P 117475-82-8P,
4,4'-Diamino-2'-methoxybenzanilide-4,4'-diaminodiphenyl
ether-pyromellitic anhydride copolymer 151958-39-3P,
3,4,3',4'-Benzophenonetetracarboxylic acid
dianhydride-1,3-bis(3-aminophenoxy)benzene-pyromellitic anhydride
copolymer 155110-61-5P 447404-67-3P,
4,4'-Diamino-2'-methoxybenzanilide-4,4'-diamino-2,2'-dimethylbiphenyl-
pyromellitic anhydride copolymer 447404-72-6P 447404-74-2P
447404-76-4P 447404-78-6P
(polyimide and metal foil laminate for flexible
printed circuit board substrate and process for producing the same)
- IT 128280-59-1P, Apical NPI
(polyimide and metal foil laminate for flexible

printing substrate and process for producing the same)
 IT 12597-68-1, Stainless steel, uses
 (polyimide and metal foil laminate for flexible
 printing substrate and process for producing the same)
 REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L36 ANSWER 16 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2001:569499 HCAPLUS Full-text
 DOCUMENT NUMBER: 135:138464
 TITLE: Manufacture of flexible metal
 foil-polymer laminate with good
 interlayer adhesion
 INVENTOR(S): Nakajima, Jun; Tagawa, Kimiteru; Otsubo, Eiji;
 Kobayashi, Masanao; Kimura, Takao
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2001212905	A	20010807	JP 2000-26923	20000204
			<--	
PRIORITY APPLN. INFO.:			JP 2000-26923	20000204
			<--	

ED Entered STN: 07 Aug 2001

AB The laminate for electronic uses, is manufactured by coating a metal foil with
 solns. of heat-resistant polymers and/or their precursors, and heat-curing the
 solns., wherein ≥ 2 layers of the polymers are formed to satisfy (IR absorption
 of the primary layer)/(IR absorption of the secondary layer) ratio 0.1-0.8.
 Thus, a Cu foil was coated with a 3,3',4,4'-benzophenonetetracarboxylic
 dianhydride-3,3'-diaminobenzophenone copolymer polyamic acid solution, dried,
 coated with a 3,3',4,4'-biphenyltetracarboxylic dianhydride-4,4'-bis(3-
 aminophenoxy)biphenyl-4,4'-diaminodiphenylether- p-phenylenediamine-
 pyromellitic dianhydride copolymer polyamic acid solution, dried, and heated
 to give a laminate showing the above IR absorption ratio 0.41 and interlayer
 adhesion between the foil and the resulting polyimide 1.28 kN/m.

IT 161359-81-5F, 3,3',4,4'-Biphenyltetracarboxylic
 dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenylether-
 p-phenylenediamine-pyromellitic dianhydride copolymer
 (secondary layer; manufacture of flexible metal foil-heat-resistant
 polymer laminate with good interlayer adhesion)

RN 161359-81-5 HCAPLUS

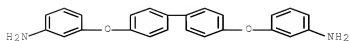
CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 1,4-benzenediamine, [5,5'-biisobenzofuran]-1,1',3,3'-tetrone,
 3,3'-[1,1'-biphenyl]-4,4'-diylbis(oxy)bis[benzenamine] and
 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

CMF C24 H20 N2 O2

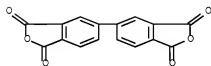
10/671,565



CM 2

CRN 2420-87-3

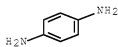
CMF C16 H6 O6



CM 3

CRN 106-50-3

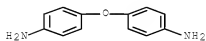
CMF C6 H8 N2



CM 4

CRN 101-80-4

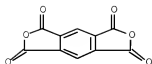
CMF C12 H12 N2 O



CM 5

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B015-08
ICS B32B015-08; C08G073-10; H05K001-03
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56
ST flexible metal foil polymer laminate manuf; copper foil polyimide flexible laminate manuf; polyamic acid soln coating metal laminate manuf; benzophenonetetracarboxylic dianhydride diaminobenzophenone copolymer laminate manuf; biphenyltetracarboxylic dianhydride polyimide laminate manuf; bisaminophenoxybiphenyl polyimide laminate manuf; diaminodiphenylether polyimide laminate manuf; phenylenediamine polyimide laminate manuf; pyromellitic dianhydride polyimide laminate manuf
IT 161359-81-5P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenylether-p-phenylenediamine-pyromellitic dianhydride copolymer (secondary layer; manufacture of flexible metal foil-heat-resistant polymer laminate with good interlayer adhesion)

L36 ANSWER 17 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

2001:421007 HCAPLUS Full-text

DOCUMENT NUMBER:

135:20567

TITLE:

Manufacture of polyimide-metal foil laminate

INVENTOR(S):

Kobayashi, Masanao; Takawa, Kimiaki; Otsubo, Eiji; Nakajima, Jun; Kimura, Takao

PATENT ASSIGNEE(S):

Mitsui Chemicals Inc., Japan

SOURCE:

Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001158061	A	20010612	JP 1999-345916	19991206
			<--	
PRIORITY APPLN. INFO.:			JP 1999-345916	19991206
			<--	

ED Entered STN: 12 Jun 2001

AB The laminate having uniform thickness of a polyimide layer coated without damaging the foil surface, suitable for printed circuit substrates, is manufactured by coating a metal foil with a polyamic acid solution and/or a polyimide solution and heating the resulting materials, wherein the foil having looseness ≤ 6 mm is supported with a preguide roll, a coating roll, and a post-guide roll and controlled to have an angle formed in contact with the coating roll 1-180° and a rolling speed of the coating roll against the running speed of the foil 115-200%. Thus, C 7025 (Cu foil, looseness 6.0 mm) was coated with a polyamic acid solution prepared from 1,3-bis(3-aminophenoxy)benzene and

3,3',4,4'-benzophenonetetracarboxylic dianhydride under the condition of the above angle 30° and the above relative speed 115% and heated to give a laminate showing uniform coating.

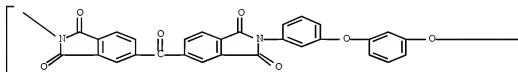
IT 54571-76-5P

(manufacture of polyimide-metal foil laminate by coating foil with solution under controlled condition for uniform polyimide layer)

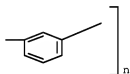
RN 54571-76-5 HCAPLUS

CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 54053-19-9, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer (manufacture of polyimide-metal foil laminate by coating foil with solution under controlled condition for uniform polyimide layer)

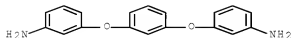
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-(1,3-phenylenebis(oxy))bis[benzenamine] (CA INDEX NAME)

CM 1

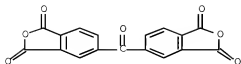
CRN 10526-07-5

CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5
CMF C17 H6 O7



- IC ICM B32B015-08
ICS B32B015-08; B32B015-20; C08G073-10; H05K003-00
- CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 56
- ST polyimide metal foil laminate manuf coating;
printed circuit substrate polyimide metal laminate
; copper foil bisaminophenoxybenzene benzophenonetetracarboxylic
dianhydride polyimide coating
- IT Metals, uses
(foil; manufacture of polyimide-metal foil laminate
by coating foil with solution under controlled condition for uniform
polyimide layer)
- IT Coating process
Laminated plastic films
(manufacture of polyimide-metal foil laminate by
coating foil with solution under controlled condition for uniform
polyimide layer)
- IT Polyketones
(polyamic acid-polyether-; manufacture of polyimide-metal foil
laminate by coating foil with solution under controlled
condition for uniform polyimide layer)
- IT Polyethers, uses
(polyamic acid-polyketone-; manufacture of polyimide-metal
foil laminate by coating foil with solution under controlled
condition for uniform polyimide layer)
- IT Polyketones
(polyether-polyimide-; manufacture of polyimide-metal foil
laminate by coating foil with solution under controlled
condition for uniform polyimide layer)
- IT Polyimides, uses
(polyether-polyketone-; manufacture of polyimide-metal foil
laminate by coating foil with solution under controlled
condition for uniform polyimide layer)
- IT Polyamic acids
(polyether-polyketone-; manufacture of polyimide-metal foil
laminate by coating foil with solution under controlled
condition for uniform polyimide layer)
- IT Polyethers, uses
(polyimide-polyketone-; manufacture of polyimide-metal foil
laminate by coating foil with solution under controlled
condition for uniform polyimide layer)
- IT 129847-71-8
(foil; manufacture of polyimide-metal foil laminate
by coating foil with solution under controlled condition for uniform
polyimide layer)
- IT 54571-76-5P
(manufacture of polyimide-metal foil laminate by

coating foil with solution under controlled condition for uniform polyimide layer)

IT 54053-19-9, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 59113-58-5 (manufacture of polyimide-metal foil laminate by coating foil with solution under controlled condition for uniform polyimide layer)

L36 ANSWER 18 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2000:427813 HCAPLUS Full-text
 DOCUMENT NUMBER: 133:62350
 TITLE: Manufacture of laminates of metal foils and heat-resistant resins
 INVENTOR(S): Ohtsubo, Eiji; Tagawa, Kimiaki; Nakajima, Jun; Kobayashi, Masanao; Kimura, Takao
 PATENT ASSIGNEE(S): Mitsui Petrochemical Industries, Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000177051	A	20000627	JP 1998-361786	19981221
			<--	
PRIORITY APPLN. INFO.:			JP 1998-361786	19981221
			<--	

ED Entered STN: 27 Jun 2000

AB In formation of heat-resistant resin layer on a metal foil, the metal surface is cleaned until the number of metal powder (maximum length $\geq 10 \mu\text{m}$) existing on the foil surface is 0, prior to application of the resin. The laminates have excellent elec. insulating properties, and are suitable for use in printed circuit boards, IC package substrates, etc.

IT 54053-19-9F, 3,3',4,4'-Benzophenonetetracarboxylic acid dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer (removal of metal powder on metal foils prior to application of heat-resistant resins for excellent elec. insulation properties)

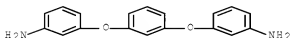
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

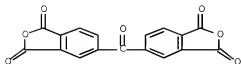
CRN 10526-07-5

CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5
CMF C17 H6 O7



IC ICM B32B015-08
ICS B32B015-08; H05K001-03; H05K003-00; H05K003-38
CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 38
ST metal foil heat resistant polymer laminate; elec insulator
metal polymer laminate manuf; surface cleaning
metal foil polymer lamination
IT Electric insulators
(laminates; removal of metal powder on metal
foils prior to application of heat-resistant resins for excellent
elec. insulation properties)
IT 28827-74-9P, 3,3',4,4'-Benzophenonetetracarboxylic acid
dianhydride-3,3'-diaminobenzophenone copolymer 51518-44-6P,
3,3',4,4'-Benzophenonetetracarboxylic acid
dianhydride-3,3'-diaminobenzophenone copolymer, sru
54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic acid
dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 54571-76-5P,
3,3',4,4'-Benzophenonetetracarboxylic
dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer, sru
72344-66-2P, 3,3',4,4'-Biphenyltetracarboxylic acid
dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer, sru
72356-03-7P, 3,3',4,4'-Biphenyltetracarboxylic acid
dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer 101407-39-0P
(removal of metal powder on metal foils prior to application of
heat-resistant resins for excellent elec. insulation properties)

L36 ANSWER 19 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:120716 HCAPLUS Full-text

DOCUMENT NUMBER: 132:167379

TITLE: Polyimide-metal foil laminate
with good flatness and adhesion and their
manufacture

INVENTOR(S): Takawa, Kimiaki; Otsubo, Eiichi; Nakajima, Jun;
Kobayashi, Masanao

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000052483	A	20000222	JP 1998-221186	19980805
			<--	
JP 4124521	B2	20080723		

JP 2007302003

A

20071122

JP 2007-158166

20070615

<--

PRIORITY APPLN. INFO.:

JP 1998-221186

A3 19980805

<--

ED Entered STN: 22 Feb 2000

AB The laminates for high-d. printed circuit boards comprise non-thermoplastic polyimide layers either or both of which are successively laminated with thermoplastic polyimide layers and metal foils with the maximum roughness of its bonding surface $\leq 3.0 \mu\text{m}$ and center-line average roughness $\leq 0.35 \mu\text{m}$. The laminates are manufactured by applying polyamic acid-containing varnishes on ≥ 1 side of non-thermoplastic polyimide layers, drying and curing at $60-600^\circ$ to cure and give thermoplastic polyimide layers, and hot-pressing metal foils with maximum roughness $\leq 3 \mu\text{m}$ and center-line average roughness $\leq 0.30 \mu\text{m}$ at $150-160^\circ$. Thus, Apical NPI (non-thermoplastic polyimide) was coated at the both sides with a polyamic acid solution [prepared from 3,3',4,4'-benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxybenzene) copolymer], dried and cured at $\leq 270^\circ$, sandwiched with C 7025 (Cu alloy foil, maximum roughness $1.8 \mu\text{m}$, center-line average roughness $0.18 \mu\text{m}$), and hot-pressed to give a 5-layer laminated board with warpage 0.5 mm , no microvoid formation, and peeling strength 1.3 kg/cm .

IT 54653-19-9F, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxybenzene) copolymer
 54571-76-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxybenzene) copolymer, sru
 (polyimide-metal foil laminate with good flatness and adhesion and their manufacture)

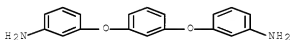
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

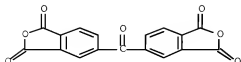
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

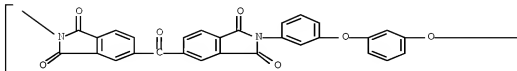
CMF C17 H6 O7



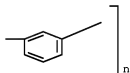
RN 54571-76-5 HCAPLUS

CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



- IC ICM B32B015-08
ICS H05K003-46
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56
- ST polyimide metal foil laminate board; polyamic acid curing metal foil laminate board; printed circuit board copper alloy laminate polyimide; varnish polyamic acid curing copper alloy laminate board
- IT Printed circuit boards
(polyimide-metal foil laminate with good flatness and adhesion and their manufacture)
- IT Polyimides, uses
(polyimide-metal foil laminate with good flatness and adhesion and their manufacture)
- IT Polyamic acids
(varnish component; thermal dehydration of; polyimide-metal foil laminate with good flatness and adhesion and their manufacture)
- IT Laminated plastics, uses
(with metal foils; polyimide-metal foil laminate with good flatness and adhesion and their manufacture)
- IT 54953-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxybenzene) copolymer
54571-76-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxybenzene) copolymer, sru
72356-03-7P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-1,3-Bis(3-aminophenoxy)benzene copolymer 106907-30-6P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-1,3-Bis(3-aminophenoxy)benzene copolymer, sru
116958-32-8P 116964-55-7P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride-4,4'-bis(3-aminophenoxy)biphenyl copolymer 116964-65-9P
(polyimide-metal foil laminate with good

flatness and adhesion and their manufacture)
 IT 59113-58-5P
 (polyimide-metal foil laminate with good
 flatness and adhesion and their manufacture)
 IT 29319-22-0D, substrate 32197-39-0D, Upilex SGA, substrate
 129847-71-8, C 7025
 (polyimide-metal foil laminate with good
 flatness and adhesion and their manufacture)
 IT 72344-66-2P, 3,3',4,4'-Biphenyltetracarboxylic
 dianhydride-1,3-Bis(3-aminophenoxy)benzene copolymer, sru
 (preparation and dehydration of; polyimide-metal foil
 laminate with good flatness and adhesion and their manufacture)
 IT 128280-59-1, Apical NPI
 (substrate; polyimide-metal foil laminate with
 good flatness and adhesion and their manufacture)

L36 ANSWER 20 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:689065 HCAPLUS Full-text

DOCUMENT NUMBER: 131:305960

TITLE: Fabrication of polyimide-metal
 laminate circuit boards

INVENTOR(S): Kimura, Takao; Tagawa, Kimiaki; Otsubo, Eiji;
 Nakajima, Atsushi; Kobayashi, Masanao

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11298114	A	19991029	JP 1998-102749	19980414
			<--	
PRIORITY APPLN. INFO.:			JP 1998-102749	19980414
			<--	

ED Entered STN: 29 Oct 1999

AB The title fabrication involves (1) forming a thermosetting/non-thermosetting/thermosetting polyimide laminate and (2) thermal melt-adhering the laminate with a metal film by the thermosetting polyimide sheet at 100-300°. The flexible laminate eliminates curling of the laminate and scratching on the metal film.

IT 54053-19-9P 155912-62-2P,
 4,4'-Bis(3-aminophenoxy)biphenyl-3,3',4,4'-biphenyltetracarboxylic
 dianhydride-pyromellitic dianhydride copolymer 161359-81-5F,
 4,4'-Bis(3-aminophenoxy)biphenyl-3,3',4,4'-biphenyltetracarboxylic
 dianhydride-4,4'-diaminodiphenyl ether-p-phenylenediamine-pyromellitic
 dianhydride copolymer
 (thermosetting/non-thermosetting/thermosetting laminate, flexible
 circuit board; fabrication of polyimide-metal
 laminate circuit boards)

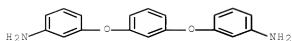
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

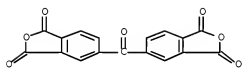
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

CMF C17 H6 O7



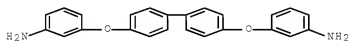
RN 155912-62-2 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
[5,5'-biisobenzofuran]-1,1',3,3'-tetrone and
3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] (9CI) (CA
INDEX NAME)

CM 1

CRN 105112-76-3

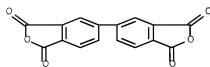
CMF C24 H20 N2 O2



CM 2

CRN 2420-87-3

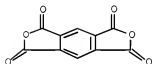
CMF C16 H6 O6



CM 3

CRN 89-32-7

CMF C10 H2 O6



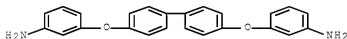
RN 161359-81-5 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 1,4-benzenediamine, [5,5'-biisobenzofuran]-1,1',3,3'-tetrone,
 3,3'-[1,1'-biphenyl]-4,4'-diylbis(oxy)bis[benzenamine] and
 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

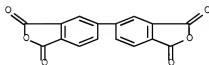
CMF C24 H20 N2 O2



CM 2

CRN 2420-87-3

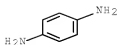
CMF C16 H6 O6



CM 3

CRN 106-50-3

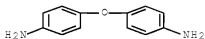
CMF C6 H8 N2



CM 4

CRN 101-80-4

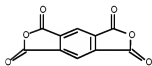
CMF C12 H12 N2 O



CM 5

CRN 89-32-7

CMF C10 H2 O6



- IC ICM H05K003-00
ICS B32B015-08; C09J179-08
- CC 76-2 (Electric Phenomena)
Section cross-reference(s): 38, 56
- ST polyimide metal film laminate flexible circuit
board curl scratch
- IT Printed circuit boards
(flexible; fabrication of polyimide-metal
laminate circuit boards)
- IT Polyimides, properties
(thermosetting/non-thermosetting/thermosetting laminate, flexible
circuit board; fabrication of polyimide-metal
laminate circuit boards)
- IT 7440-50-8, Copper, properties
(film, for printed circuit; fabrication of polyimide-metal
laminate circuit boards)
- IT 28827-74-9P, 3,3',4,4'-Benzophenonetetracarboxylic
dianhydride-3,3'-diaminobenzophenone copolymer 54053-19-9P
155912-62-2P, 4,4'-Bis(3-aminophenoxy)biphenyl-3,3',4,4'-
biphenyltetracarboxylic dianhydride-pyromellitic dianhydride copolymer
161359-81-5P, 4,4'-Bis(3-aminophenoxy)biphenyl-3,3',4,4'-
biphenyltetracarboxylic dianhydride-4,4'-diaminodiphenyl

ether-p-phenylenediamine-pyromellitic dianhydride copolymer
(thermosetting/non-thermosetting/thermosetting laminate, flexible
circuit board; fabrication of polyimide-metal
laminate circuit boards)

L36 ANSWER 21 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:679903 HCAPLUS Full-text

DOCUMENT NUMBER: 131:323568

TITLE: Polyimide-metal laminates and
production methods therefor

INVENTOR(S): Takawa, Kimiteru; Otsubo, Eiji; Nakajima, Atsushi;
Kobayashi, Masanao; Kimura, Takao

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 11291392	A	19991026	JP 1998-100861	19980413
			<--	
JP 3827859	B2	20060927	JP 1998-100861	19980413
			<--	

PRIORITY APPLN. INFO.: JP 1998-100861 19980413

ED Entered STN: 26 Oct 1999

AB A thermoplastic polyimide, a nonthermoplastic polyimide, a thermoplastic polyimide, a nonthermoplastic polyimide, and a thermoplastic polyimide are laminated orderly on a metal to prepare a laminate having little warping. Thus, a laminate comprised a Cu foil (SLP 18), 4,4'-benzophenonetetracarboxylic acid dianhydride-3,3'-diaminobenzophenone copolymer, 4,4'-benzophenonetetracarboxylic acid dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl ether-p-phenylenediamine-pyromellitic dianhydride copolymer, 1,3-bis(3-aminophenoxy)benzene-4,4'-benzophenonetetracarboxylic acid dianhydride copolymer (I), Upilex SGA, and I.

IT 54053-19-9P 145584-79-8P 247905-28-8P,
Benzophenonetetracarboxylic acid
dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl
ether-p-phenylenediamine-pyromellitic dianhydride copolymer
(laminates of thermoplastic and nonthermoplastic polyimides with
metals with little warping)

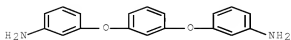
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
3,3'-[1,3-phenylenebis(oxy)]bis[benzamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

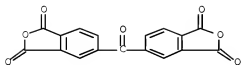
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

CMF C17 H6 O7



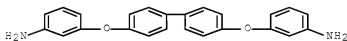
RN 145584-79-8 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 3,3'-[[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 5,5'-carbonylbis[1,3-isobenzofurandione] (9CI) (CA INDEX NAME)

CM 1

CRN 105112-76-3

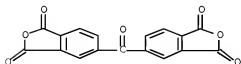
CMF C24 H20 N2 O2



CM 2

CRN 2421-28-5

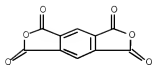
CMF C17 H6 O7



CM 3

CRN 89-32-7

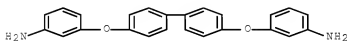
CMF C10 H2 O6



RN 247905-28-8 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 1,4-benzenediamine, 3,3'-[([1,1'-biphenyl]-4,4'-
 diylbis(oxy)]bis[benzenamine],
 5,5'-carbonylbis[1,3-isobenzofurandione] and 4,4'-oxybis[benzenamine]
 (9CI) (CA INDEX NAME)

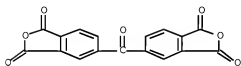
CM 1

CRN 105112-76-3
 CMF C24 H20 N2 O2



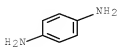
CM 2

CRN 2421-28-5
 CMF C17 H6 O7



CM 3

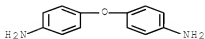
CRN 106-50-3
 CMF C6 H8 N2



CM 4

CRN 101-80-4

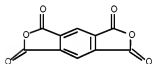
CMF C12 H12 N2 O



CM 5

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B015-08

ICS B32B031-00; H05K001-03

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 55, 56

ST thermoplastic nonthermoplastic polyimide metal laminate

IT Alloys, uses

Metals, uses

(laminates of thermoplastic and nonthermoplastic polyimides with metals with little warping)

IT 28827-74-9P, 4, 4'-Benzophenonetetracarboxylic dianhydride-3,3'-diaminobenzophenone copolymer 51396-26-0P, Benzophenonetetracarboxylic acid dianhydride-3,3'-diaminobenzophenone copolymer, SRU 51518-44-6P 54053-19-9P 54571-76-5P 59113-58-5P 145584-79-8P 247905-28-8P, Benzophenonetetracarboxylic acid dianhydride-4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl ether-p-phenylenediamine-pyromellitic dianhydride copolymer (laminates of thermoplastic and nonthermoplastic polyimides with metals with little warping)

L36 ANSWER 22 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:678230 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 131:300351

TITLE: Polyimide-metal laminates with

reduced warpage and their manufacture

INVENTOR(S): Tagawa, Kimiteru; Otsubo, Eiji; Nakajima, Atsushi; Kobayashi, Masanao; Kimura, Takao

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11291391	A	19991026	JP 1998-100859	19980413
JP 3827858	B2	20060927	<--	
PRIORITY APPLN. INFO.:			JP 1998-100859	19980413
			<--	

ED Entered STN: 26 Oct 1999

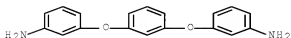
AB The laminates, useful for flexible printed circuit boards, are manufactured by (1) applying a nonthermoplastic polyimide precursor solution on one side of a metal foil, drying, further applying a thermoplastic polyimide (precursor) solution on the resulting surface, drying, and heating to give an A/B/C1 laminate, (2) coating of both sides of a nonthermoplastic polyimide film with a thermoplastic polyimide (precursor) solution, drying, and heating to give C2/D/E laminate, and (3) heat-bonding of C1 and C2 layers at 100-300° to give an A/B/C/D/E laminate. Thus, a Cu foil (SLP 18) was coated with a poly(amic acid) (p-phenylenediamine 7.7, 4,4'-diaminodiphenyl ether 1.15, 4,4'-bis(3-aminophenoxy)biphenyl 1.15, 3,3',4,4'-biphenyltetracarboxylic dianhydride 5.4, and pyromellitic dianhydride 4.45 mol) and heated to form B layer, which was further coated with a 1,3-bis(3-aminophenoxy)benzene-3,3',4,4'-benzophenonetetracarboxylic dianhydride poly(amic acid) (I) and cured at 300-400° to form C1 layer. Sep., both sides of a nonthermoplastic polyimide film (Upilex SGA) were coated with I and cured to form C2 and E layers, then the C2 layer and the C1 layer were contacted and pressed at 240° to give a laminate showing reduced warpage.

IT 54053-13-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
 54571-76-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer, sru
 161359-81-5P, 4,4'-Bis(3-aminophenoxy)biphenyl-3,3',4,4'-biphenyltetracarboxylic dianhydride-4,4'-diaminodiphenyl ether-p-phenylenediamine-pyromellitic dianhydride copolymer (manufacture of multilayer polyimide-metal laminates with reduced warpage)
 RN 54053-19-9 HCAPLUS
 CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

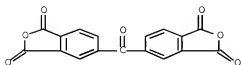
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

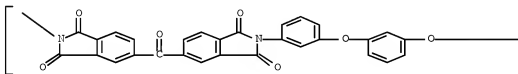
CMF C17 H6 O7



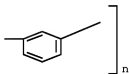
RN 54571-76-5 HCAPLUS

CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



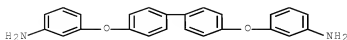
RN 161359-81-5 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 1,4-benzenediamine, [5,5'-biisobenzofuran]-1,1',3,3'-tetrone, 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

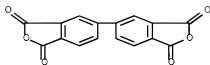
CMF C24 H20 N2 O2



CM 2

CRN 2420-87-3

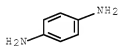
CMF C16 H6 O6



CM 3

CRN 106-50-3

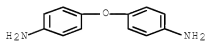
CMF C6 H8 N2



CM 4

CRN 101-80-4

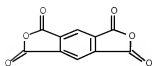
CMF C12 H12 N2 O



CM 5

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B015-08
ICS B32B015-08; H05K003-00; C08G073-10

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56, 76

IT Printed circuit boards
(flexible; manufacture of multilayer polyimide-metal laminates with reduced warpage for)

IT Laminated plastics, uses
Polyimides, uses
(manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyketones
Polyketones
(polyamic acid-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyketones
Polyketones
Polyketones
(polyamic acid-polyether-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyethers, preparation
Polyethers, preparation
Polyethers, preparation
(polyamic acid-polyketone-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyimides, uses
Polyimides, uses
(polyether-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyketones
Polyketones
Polyketones
(polyether-polyimide-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyimides, uses
Polyimides, uses
Polyimides, uses
(polyether-polyketone-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyamic acids
Polyamic acids
Polyamic acids
(polyether-polyketone-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyethers, uses
Polyethers, uses
Polyketones
Polyketones
(polyimide-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyethers, uses
Polyethers, uses
Polyethers, uses
(polyimide-polyketone-; manufacture of multilayer polyimide-metal laminates with reduced warpage)

IT Polyimides, uses
Polyimides, uses

- (polyketone-; manufacture of multilayer polyimide-metal laminates with reduced warpage)
- IT Polyamic acids
Polyamic acids
(polyketone-; manufacture of multilayer polyimide-metal laminates with reduced warpage)
- IT 7440-50-8, Copper, uses
(foil, SLP 18; manufacture of multilayer polyimide-metal laminates with reduced warpage)
- IT 28827-74-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3'-diaminobenzophenone copolymer 51518-44-6P
54053-19-9P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer
54571-76-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer, sru
161359-91-5P, 4,4'-Bis(3-aminophenoxy)biphenyl-3,3',4,4'-biphenyltetracarboxylic dianhydride-4,4'-diaminodiphenyl ether-p-phenylenediamine-pyromellitic dianhydride copolymer
(manufacture of multilayer polyimide-metal laminates with reduced warpage)
- IT 51396-26-0P 59113-58-5P, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene copolymer, polyamic acid sru
(manufacture of multilayer polyimide-metal laminates with reduced warpage)
- IT 29319-22-0 32197-39-0, Upilex SGA
(manufacture of multilayer polyimide-metal laminates with reduced warpage)

L36 ANSWER 23 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:

1999:426952 HCAPLUS [Full-text](#)

DOCUMENT NUMBER:

131:59714

TITLE:

Metal-base reflector with thermoplastic polyimide layer

INVENTOR(S):

Goto, Masami; Kawamoto, Satoshi; Fukuda, Noboru

PATENT ASSIGNEE(S):

Mitsui Chemicals Inc., Japan

SOURCE:

Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT:

1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11183713	A	19990709	JP 1997-355744	19971224
			<--	
PRIORITY APPLN. INFO.:			JP 1997-355744	19971224
			<--	

ED Entered STN: 12 Jul 1999

AB The title reflector, with good heat resistance and interfacial adhesion, comprises a metal base (e.g., of Al plate), a thermoplastic polyimide layer [e.g., phthalic anhydride-terminated 4,4'-bis(3-aminophenoxy)biphenyl-pyromellitic dianhydride copolymer], and a metal reflective layer (e.g., sputtering Ag layer or vapor-depositing Al layer, and SiO2 transparent protective layer).

IT 105218-97-1D, 4,4'-Bis(3-aminophenoxy)biphenyl-pyromellitic dianhydride copolymer, phthalic anhydride-terminated
(metal-base reflector with thermoplastic polyimide layer)

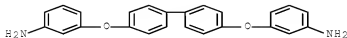
RN 105218-97-1 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] (CA INDEX
NAME)

CM 1

CRN 105112-76-3

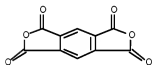
CMF C24 H20 N2 O2



CM 2

CRN 89-32-7

CMF C10 H2 O6



IC ICM G02B005-08
ICS B32B027-00; F21V007-22; B32B015-08

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 56, 73

IT Laminated plastics, uses

Polyimides, uses

(metal-base reflector with thermoplastic polyimide layer)

IT 105218-97-1D, 4,4'-Bis(3-aminophenoxy)biphenyl-pyromellitic
dianhydride copolymer, phthalic anhydride-terminated 138366-53-7
(metal-base reflector with thermoplastic polyimide layer)

L36 ANSWER 24 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:380621 HCAPLUS Full-text

DOCUMENT NUMBER: 131:59730

TITLE: Heat-resistant metal-clad
laminates for electric circuit boards and
their manufacture

INVENTOR(S): Takeuchi, Etsu; Yamamori, Yoshiyuki

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11157002	A	19990615	JP 1997-323204	19971125
			<--	
JP 3270378	B2	20020402		
PRIORITY APPLN. INFO.:			JP 1997-323204	19971125
			<--	

ED Entered STN: 21 Jun 1999

AB The laminates comprise metal layers and heat-resistant resin layers and are bonded by an adhesives which are obtained from (A) organic-solvent-soluble polyimide resins having glass temperature (Tg) of <350°, 100, (B) polyepoxy compds. 5-100, and (C) compds. bearing H groups reactive to the B, 0.1-30 parts. Thus, adding 3,3',4,4'-biphenyltetracarboxylic dianhydride 82.4 and 3,3',4,4'-benzophenonetetracarboxylic dianhydride 38.7 to a solution of 2,2'-bis[4-(4-aminophenoxy)phenyl]propane 82.1, 1,3-bis(3-aminophenoxy)benzene 38.7 and α,ω -bis(3-aminopropyl)dimethylsiloxane 24.9 in N-methyl-2-pyrrolidone 1428 g and mixing for 8 h at 20°, adding 612 g PhMe, and heating at 175° for 6 h gave a polyimide solution Coating a mixture of the solution above with 20 g Epikote 828 and 10 g Xylok on a Upilex 25 SGA film to dry pickup thickness 7 μ m, drying, and press laminating with a Cu foil gave a flexible laminate with no bubble and peel strength 1.1 kg/cm.

IT 156551-00-7, 3,3',4,4'-Benzophenonetetracarboxylic dianhydride-3,3',4,4'-biphenyltetracarboxylic dianhydride-1,3-bis(3-aminophenoxy)benzene-2,2'-bis[4-(4-aminophenoxy)phenyl]propane- α,ω -bis(3-aminopropyl)polydimethylsiloxane copolymer (adhesive compns.; for manufacture of heat-resistant metal-clad laminates for elec. circuit boards)

RN 156551-00-7 HCAPLUS

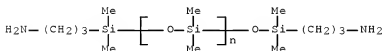
CN [5,5'-Biisobenzofuran]-1,1',3,3'-tetrone, polymer with α -{[(3-aminopropyl)dimethylsilyl]- ω -{[(3-aminopropyl)dimethylsilyl]oxy}poly[oxy(dimethylsilylene)]}, 5,5'-carbonylbis[1,3-isobenzofurandione], 4,4'-[(1-methylethylidene)bis(4,1-phenyleneoxy)]bis[benzenamine] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine], block (CA INDEX NAME)

CM 1

CRN 97917-34-5

CMF (C2 H6 O Si)_n C10 H28 N2 O Si2

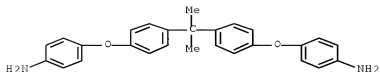
CCI PMS



CM 2

CRN 13080-86-9

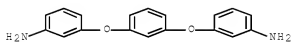
CMF C27 H26 N2 O2



CM 3

CRN 10526-07-5

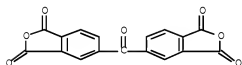
CMF C18 H16 N2 O2



CM 4

CRN 2421-28-5

CMF C17 H6 O7



- Printed circuit boards
(manufacture of heat-resistant metal-clad laminates
for elec. circuit boards)
- IT Laminated plastics, uses
(manufacture of heat-resistant metal-clad laminates
for elec. circuit boards)
- IT Polysiloxanes, uses
Polysiloxanes, uses
(polyimide-, adhesive compns.; for manufacture of heat-resistant
metal-clad laminates for elec. circuit boards)
- IT Polyimides, uses
Polyimides, uses
(polysiloxane-, adhesive compns.; for manufacture of heat-resistant
metal-clad laminates for elec. circuit boards)
- IT Adhesives
(solvent-soluble polyimide blend; for manufacture of heat-resistant
metal-clad laminates for elec. circuit boards)
- IT 25068-38-6, Epikote 828 156551-00-7,
3,3',4,4'-Benzophenonetetracarboxylic
dianhydride-3,3',4,4'-biphenyltetracarboxylic
dianhydride-1,3-bis(3-aminophenoxy)benzene-2,2'-bis[4-(4-
aminophenoxy)phenyl]propane- α , ω -bis(3-
aminopropyl)polydimethylsiloxane copolymer
(adhesive compns.; for manufacture of heat-resistant metal
-clad laminates for elec. circuit boards)
- IT 227962-14-3, Upilex 25SGA
(film substrate; for manufacture of heat-resistant metal-clad
laminates for elec. circuit boards)
- IT 7440-50-8, Copper, uses
(foils; for manufacture of heat-resistant metal-clad
laminates for elec. circuit boards)

L36 ANSWER 25 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:509058 HCAPLUS Full-text

DOCUMENT NUMBER: 129:203918

ORIGINAL REFERENCE NO.: 129:41403a,41406a

TITLE: Flexible metal foil-polyimide
laminates showing good adhesion and no
warpage on cutting

INVENTOR(S): Kojima, Kazuki; Sudo, Nobuyuki; Aisawa, Koichi;
Kobayashi, Masanao; Shishito, Shigeyuki; Tsushima,
Takaki

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10209583	A	19980807	JP 1997-12524	19970127
			<--	
PRIORITY APPLN. INFO.:			JP 1997-12524	19970127
			<--	

ED Entered STN: 17 Aug 1998

AB The laminate is manufactured by coating on ≥ 1 side a metal foil or polyimide film with a thermoplastic polyimide (or precursor and mixture), curing the thermoplastic polyimide layer, overlapping with a metal foil laminate with the

cured polyimide layer in between, and pressing the resulting laminate with ≥ 2 hot pressing rolls that have a temperature difference of $1-80^{\circ}$. Coating a 20% NMP solution of polyamic acid from 1,3-bis(3-aminophenoxy)benzene, 3,3',4,4'-benzophenonetetracarboxylic dianhydride and 3,3',4,4'-biphenyltetracarboxylic acid dianhydride on Cu-Ni alloy, curing the resin by heating, overlapping with a $20\text{-}\mu\text{m}$ SUS 304 foil, and hot pressing with a roll (on the SUS 304 side) at 220° and a roll (on the Ni-Cu side) at 210° for 100 s under 30 kgf/cm^2 gave a laminate showing no warpage after cutting.

IT 167857-87-6P

(flexible metal foil-polyimide laminate showing good adhesion and no warpage on cutting)

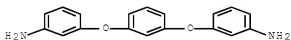
RN 167857-87-6 HCAPLUS

CN [5,5'-Biisobenzofuran]-1,1',3,3'-tetrone, polymer with 5,5'-carbonylbis[1,3-isobenzofurandione] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

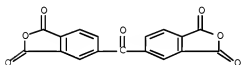
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

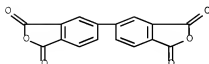
CMF C17 H6 O7



CM 3

CRN 2420-87-3

CMF C16 H6 O6



IC ICM H05K001-03
 ICS H05K001-03; H05K003-00; H05K003-46
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 55, 56
 ST flexible metal foil polyimide laminate; warpage
 metal polyimide laminate cutting
 IT Lamination
 (flexible metal foil-polyimide laminate showing
 good adhesion and no warpage on cutting)
 IT Polyamic acids
 (flexible metal foil-polyimide laminate showing
 good adhesion and no warpage on cutting)
 IT laminated plastics, uses
 Metals, uses
 Polyimides, uses
 (flexible metal foil-polyimide laminate showing
 good adhesion and no warpage on cutting)
 IT 167857-87-6P
 (flexible metal foil-polyimide laminate showing
 good adhesion and no warpage on cutting)
 IT 7440-50-8, BHY 02B-T, uses 11101-28-3 11109-50-5, SUS 304
 (flexible metal foil-polyimide laminate showing
 good adhesion and no warpage on cutting)

L36 ANSWER 26 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1996:34564 HCAPLUS Full-text

DOCUMENT NUMBER: 124:43192

ORIGINAL REFERENCE NO.: 124:7917a,7920a

TITLE: Manufacturing methods of both sides metallic
 laminate plates having flexibility

INVENTOR(S): Kijima, Shigeki; Yamanaka, Hidesuke; Aizawa,
 Koichi; Shishido, Shigeyuki; Takagi, Shigeyuki;
 Oikawa, Hideaki

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

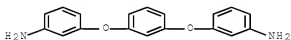
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 06286053	A	19941011	JP 1993-80430	19930407
			<--	
JP 3318035	B2	20020826		
PRIORITY APPLN. INFO.:			JP 1993-80430	19930407
			<--	

ED Entered STN: 18 Jan 1996

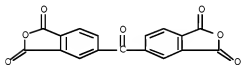
AB The flexible double-sided metal-laminated circuit board is manufactured by spreading a thermal-curing polyimide varnish dissolved in an organic solvent onto a metal foil or a polyamic acid varnish-coated metal foil, making an all-polyimide single-sided flexible metal laminate board by removing the solvent and/or finishing imidization of the polyamic acid, pressing while heating the flexible metal laminate board onto another metal foil or another all-polyimide single-sided flexible metal laminate board manufactured by the same method. The flexible circuit boards, with high heat and chemical resistance,

nonflammability and good elec. properties, are manufactured without using adhesives.

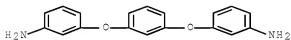
IT 54053-19-9 54053-19-9E, reaction products with
 γ-picoline and aniline 54571-76-5
 (manufacture of flexible double-sided metal laminate
 circuit boards)
 RN 54053-19-9 HCAPLUS
 CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)
 CM 1
 CRN 10526-07-5
 CMF C18 H16 N2 O2



CM 2
 CRN 2421-28-5
 CMF C17 H6 O7

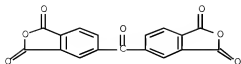


RN 54053-19-9 HCAPLUS
 CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)
 CM 1
 CRN 10526-07-5
 CMF C18 H16 N2 O2



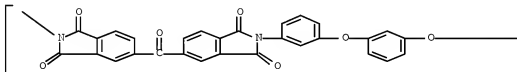
CM 2

CRN 2421-28-5
 CME C17 H6 O7

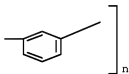


RN 54571-76-5 HCAPLUS
 CN Poly[(1,3-dihydro-1,3-dioxo-2H-isoindole-2,5-diyl)carbonyl(1,3-dihydro-1,3-dioxo-2H-isoindole-5,2-diyl)-1,3-phenyleneoxy-1,3-phenyleneoxy-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM B32B015-08
 ICS H05K001-03; H05K003-00; H05K009-00
 ICA C08G073-10
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 38
 IT Polyimides, uses
 (manufacture of flexible double-sided metal laminate circuit boards)
 IT Electric circuits
 (printed, boards, manufacture of flexible double-sided metal laminate circuit boards)
 IT 100-21-0, p-Phthalic acid, uses 32197-39-0, Upilex S
 54053-19-9 54053-19-9D, reaction products with
 γ-picoline and aniline 54571-76-5 67297-90-9
 67297-90-9D, reaction products with maleic anhydride,
 γ-picoline, naphthalene dicarboxylic acid anhydride, and aniline
 72344-66-2 72344-67-3 72356-03-7 72356-03-7D, reaction products
 with γ-picoline and aniline

(manufacture of flexible double-sided metal laminate
circuit boards)

L36 ANSWER 27 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 1995:869759 HCAPLUS Full-text
 DOCUMENT NUMBER: 123:342626
 ORIGINAL REFERENCE NO.: 123:61479a,61482a
 TITLE: Thermoplastic polyimides with improved adhesion
 and their adhesive devices
 INVENTOR(S): Kijima, Shigeki; Sudo, Nobuyuki; Aizawa, Koichi;
 Shishido, Shigeyuki; Tsushima, Takaaki; Kojima,
 Kazunori; Yamanaka, Hidesuke
 PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07188428	A	19950725	JP 1993-331985	19931227
			<--	
JP 3360763	B2	20021224	JP 1993-331985	19931227
			<--	

PRIORITY APPLN. INFO.: JP 1993-331985 19931227

ED Entered STN: 21 Oct 1995

AB Thermoplastic polyimides are heated above their glass transition point (T_g), treated on the surface with ozone, and heat-pressed to give title polymers, useful for adhesive agents, etc. The title device have substrate-carrying or heat-press rolls, on which the polyimide are treated in the process. Thus, LARC-TPI (T_g 245°) was coated on SUS 304 foil, heated at 260° in N for 24 h, treated with O₃ gas at 260° for 30 s, laminated with Cu foil, and pressed at 260° for 10 min to give Cu/polyimide/SUS 304 laminate showing peeling strength 1.3 kg/cm.

IT 54053-19-9F 165043-30-1P
 (thermoplastic polyimides with improved adhesion and their application devices)

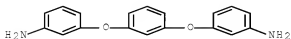
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

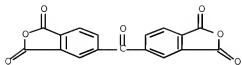
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

CMF C17 H6 O7



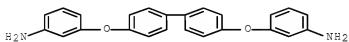
RN 165043-30-1 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 3,3'-[[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 105112-76-3

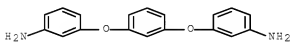
CMF C24 H20 N2 O2



CM 2

CRN 10526-07-5

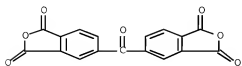
CMF C18 H16 N2 O2



CM 3

CRN 2421-28-5

CMF C17 H6 O7



IC ICM C08J005-12
 ICS B32B027-34; C08J007-12
 ICI C08L079-08
 CC 38-2 (Plastics Fabrication and Uses)
 Section cross-reference(s): 37, 47, 56
 ST thermoplastic polyimide improved adhesion laminate; polyimide adhesion device metal laminate; adhesive agent polyimide laminate; application device thermoplastic polyimide adhesive
 IT 54953-19-9P 165043-30-1P
 (thermoplastic polyimides with improved adhesion and their application devices)

L36 ANSWER 28 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1995:290020 HCAPLUS Full-text

DOCUMENT NUMBER: 122:58241

ORIGINAL REFERENCE NO.: 122:11233a,11236a

TITLE: Manufacture of flexible metal-polyimide laminated sheets

INVENTOR(S): Takemura, Yasuo; Narimatsu, Osamu; Kabetani, Toshihiko

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06143492	A	19940524	JP 1992-302268	19921112
			<--	
PRIORITY APPLN. INFO.:			JP 1992-302268	19921112
			<--	

ED Entered STN: 12 Jan 1995

AB Title sheets are prepared by spreading organic solvent solns. of polyamic acids on resin films (A), drying, peeling the polyamic acid films (B) off the A, laminating B on metal foils, and imidizing the B. A Cu foil and 4,4'-diaminodiphenyl ether-3,3',4,4'-benzophenonetetracarboxylicdianhydride-1,3-bis(3-aminophenoxy)benzene copolymer film laminate was prepared as described above with a PET as the A and showed curling prevention approx. 5 times better than a laminate prepared by directly coating B solution on the Cu foil and imidizing.

IT 110749-59-2

(pre-formation of polyamic acid films; manufacture of polyimide and metal laminates with curling prevention)

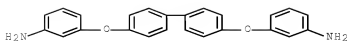
RN 110749-59-2 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

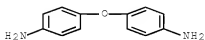
CMF C24 H20 N2 O2



CM 2

CRN 101-80-4

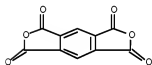
CMF C12 H12 N2 O



CM 3

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B015-08

ICS B32B031-00

CC 42-2 (Coatings, Inks, and Related Products)

Section cross-reference(s): 55

ST metal polyimide laminate curling prevention

IT Coating process

(pre-formation of polyamic acid films; manufacture of polyimide and metal laminates with curling prevention)

IT Polyamic acids

Polyimides, uses

(pre-formation of polyamic acid films; manufacture of polyimide and metal laminates with curling prevention)

IT 7440-50-8, Copper, miscellaneous 9003-07-0, Polypropylene

25038-59-9, PET polymer, miscellaneous

(peelable base film; manufacture of polyimide and metal laminates with curling prevention)

IT 116749-59-2 160144-46-7

(pre-formation of polyamic acid films; manufacture of polyimide and metal laminates with curling prevention)

L36 ANSWER 29 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1994:485344 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 121:85344
 ORIGINAL REFERENCE NO.: 121:15335a,15338a
 TITLE: Polyimide and metal laminates for antifriction materials
 INVENTOR(S): Tanaka, Mitsuru; Oki, Yoshiro
 PATENT ASSIGNEE(S): Ntn Toyo Bearing Co Ltd, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06071810	A	19940315	JP 1992-229808	19920828
			<--	
JP 3153011	B2	20010403	JP 1992-229808	19920828
			<--	

PRIORITY APPLN. INFO.:

ED Entered STN: 20 Aug 1994

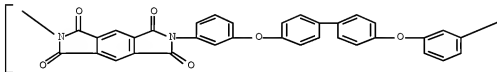
AB The laminates comprise a metal substrate and a copolymer of bis(3-aminophenoxy)biphenyl and pyromellitic dianhydride. A laminate from a steel plate, an adhesive, and a mixture of New TPI 450 85, PTFE 3, and Bellpearl C 2000 12% showed coefficient of friction 35 + 1-10 cm3/kg-m, vs. 52 + 1-10 cm3/kg-m without the steel plate and the adhesive.

IT 105359-94-2, New TPI 450
 (laminated with metals, for antifrictional materials)

RN 105359-94-2 HCAPLUS

CN Poly[(5,7-dihydro-1,3,5,7-tetraoxobenz[1,2-c:4,5-c']dipyrrole-2,6(1H,3H)-diyl)-1,3-phenyleneoxy[1,1'-biphenyl]-4,4'-diyl-1,3-phenylene] (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

]

IC ICM B32B015-08
 ICS C08J005-16
 CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 55

IT 105359-94-2, New TPI 450
(laminated with metals, for antifrictional materials)

L36 ANSWER 30 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1994:459184 HCAPLUS Full-text

DOCUMENT NUMBER: 121:59184

ORIGINAL REFERENCE NO.: 121:10661a,10664a

TITLE: Manufacture of flexible metal and polyimide laminates for printed circuit boards

INVENTOR(S): Kabetani, Toshihiko; Narimatsu, Osamu; Takemura, Yasuo

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 06064091	A	19940308	JP 1992-219109	19920818
			<--	
PRIORITY APPLN. INFO.:			JP 1992-219109	19920818
			<--	

ED Entered STN: 06 Aug 1994

AB The process is carried out by applying a polyamic acid solution [e.g., 4,4'-bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl ether-pyromellitic dianhydride copolymer precursor in DMA solution] through a coating die, where the die is installed at the bottom side of a roll and the die has a lip hold-up part larger than the flow path volume at the downstream-side (with respect to the advancing direction of the metal foil) lip outlet. More specifically, the coating die is installed by inclining toward the downstream side (with respect to the advancing direction of the metal foil) at $\theta = 0.5-20.0^\circ$ (θ = angle of center axis of the coating die based on the axis connecting the roll center and the outlet of lip outlet).

IT 110749-59-2, 4,4'-Bis(3-aminophenoxy)biphenyl-4,4'-diaminodiphenyl ether-pyromellitic dianhydride copolymer (coatings of, on metal foil, die design in relation to, for elec. circuits)

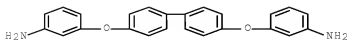
RN 110749-59-2 HCAPLUS

CN 1H,3H-Benz[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 3,3'-[1,1'-biphenyl]-4,4'-diylbis(oxy)bis[benzenamine] and 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

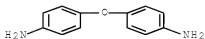
CMF C24 H20 N2 O2



CM 2

CRN 101-80-4

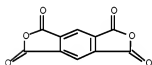
CMF C12 H12 N2 O



CM 3

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B015-08

ICS B05D007-14; B05D007-24; H05K001-03

CC 38-2 (Plastics Fabrication and Uses)

Section cross-reference(s): 42, 76

ST laminating polyimide metal foil equipment;

polyamic acid laminating metal printed circuit;

coating polyamic acid copper foil

IT 110749-59-2, 4,4'-Bis(3-aminophenoxy)biphenyl-4,4'-

diaminodiphenyl ether-pyromellitic dianhydride copolymer

(coatings of, on metal foil, die design in relation to, for elec. circuits)

L36 ANSWER 31 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1994:79109 HCAPLUS Full-text

DOCUMENT NUMBER: 120:79109

ORIGINAL REFERENCE NO.: 120:14217a,14220a

TITLE: Manufacture of flexible metal-polyimide laminates

INVENTOR(S): Takemura, Yasuo; Narimatsu, Osamu; Kabetani, Toshihiko

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Japan

SOURCE: Jpn. Kokai Tokyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05229087	A	19930907	JP 1992-37381	19920225
JP 3100453	B2	20001016	<--	
PRIORITY APPLN. INFO.:			JP 1992-37381	19920225
			<--	

ED Entered STN: 19 Feb 1994

AB In manufacture of title laminates by coating metal foils by polyamic acid organic solvents solns, drying, and imidizing, the intermediates are dried from the metal foil side after the solvent content is reduced to 200-700% (based on resin-solids) then the content is kept at $\geq 1.0\%$ after drying. Thus, 12.5% N,N-dimethylacetamide solution of 294:240:644 1,3-bis(3-aminophenoxy)benzene-4,4'-diaminodiphenyl ether-3,3',4,4'-benzophenonetetracarboxylic dianhydride copolymer was applied onto a Cu foil, heated at 130°, and dried by air at 160° from the metal side to give a flexible laminate.

IT 54570-91-1P 110749-59-2P

(preparation of, flexible coatings, for metal foils)

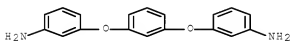
RN 54570-91-1 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 4,4'-oxybis[benzenamine] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

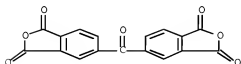
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CM 2

CRN 2421-28-5

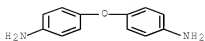
CMF C17 H6 O7



CM 3

CRN 101-80-4

CMF C12 H12 N2 O



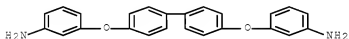
RN 110749-59-2 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

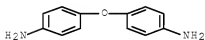
CMF C24 H20 N2 O2



CM 2

CRN 101-80-4

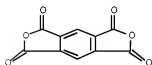
CMF C12 H12 N2 O



CM 3

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B031-12

ICS B32B015-08; H05K001-03

CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 42, 76
 ST flexible metal polyimide sheet laminate; drying
 metal polyimide laminate manuf; printed circuit
 metal polyimide laminate
 IT Electric circuits
 (printed, flexible laminates of metals and
 polyimides for, drying process for)
 IT 54570-91-1P 110749-59-2F
 (preparation of, flexible coatings, for metal foils)

L36 ANSWER 32 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 1994:79079 HCAPLUS Full-text
 DOCUMENT NUMBER: 120:79079
 ORIGINAL REFERENCE NO.: 120:14213a,14216a
 TITLE: Bending-resistant flexible metal
 -polyimide laminates
 INVENTOR(S): Takemura, Yasuo; Narimatsu, Osamu; Kabetani,
 Toshihiko
 PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05245433	A	19930924	JP 1992-48274	19920305
			<--	
PRIORITY APPLN. INFO.:			JP 1992-48274	19920305
			<--	

ED Entered STN: 19 Feb 1994

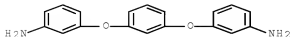
AB Organic solns. containing polyamic acids are supplied to a die coater with a compressed gas (air), coated on metal foils, dried, and imidated to prepare laminates. Laminates prepared by this method have better bending resistance than do laminates prepared with solns. supplied with a pump. Thus, a laminate was prepared from
 1,3-bis(3-aminophenoxy)benzene-4,4'-diaminodiphenyl ether-3,3',4,4'-benzophenonetetracarboxylic dianhydride copolymer and a Cu foil.

IT 54570-91-1
 (laminates with copper foil, flexible, bending-resistant)
 RN 54570-91-1 HCAPLUS
 CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 4,4'-oxybis[benzenamine] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

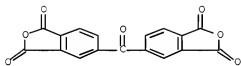
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

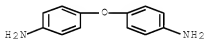
CMF C17 H6 O7



CM 3

CRN 101-80-4

CMF C12 H12 N2 O



IC ICM B05D007-14

ICS B05D001-26; B05D007-24; B32B015-08

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 56

IT 54570-91-1 152383-82-9

(laminates with copper foil, flexible, bending-resistant)

L36 ANSWER 33 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1994:56169 HCAPLUS Full-text

DOCUMENT NUMBER: 120:56169

ORIGINAL REFERENCE NO.: 120:10243a,10246a

TITLE: Manufacture of flexible metal-clad polyimide laminates

INVENTOR(S): Takemura, Yasuo; Narimatsu, Osamu; Kabetani, Toshihiko

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05237969	A	19930917	JP 1992-44531	19920302
			<--	
PRIORITY APPLN. INFO.:			JP 1992-44531	19920302

ED Entered STN: 05 Feb 1994

AB The title laminates, useful for printed circuit boards, are manufactured by coating organic solns. of polyamic acids on metal foils, drying, and imidization of the polyamic acids, in which the drying process comprises (A) transporting the films using rollers lined in arch structure and (B) passing the films through rollers in zigzag manner after the solvent content reached 20-40 phr. Thus, polymerization of 294 g 1,3-bis(3-aminophenoxy)benzene and 240 g 4,4'-diaminodiphenyl ether with 644 g 3,3',4,4'-benzophenonetetracarboxylic dianhydride in AcNMe₂ at 10° for 24 h, diluting the polyamic acid solution with AcNMe₂, applying the solution on a 35-μm Cu foil at 120-μm thickness, heating at 160° to solvent content 40 phr, and drying the film to solvent content 2.0 phr by passing it through rollers in a zigzag manner gave a polyamic acid-coated Cu foil with good curling resistance.

IT 54570-91-1 119749-59-2

(films, metal-clad laminates, drying process in manufacture of, with curling resistance)

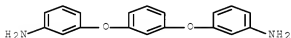
RN 54570-91-1 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 4,4'-oxybis[benzenamine] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

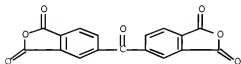
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

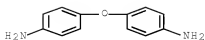
CMF C17 H6 O7



CM 3

CRN 101-80-4

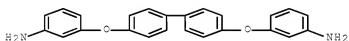
CMF C12 H12 N2 O



RN 110749-59-2 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 3,3'-[[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 4,4'-oxybis[benzenamine] (CA INDEX NAME)

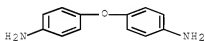
CM 1

CRN 105112-76-3
 CMF C24 H20 N2 O2



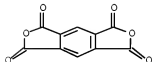
CM 2

CRN 101-80-4
 CMF C12 H12 N2 O



CM 3

CRN 89-32-7
 CMF C10 H2 O6



IC ICM B32B015-08
 ICS B32B031-12; C08L079-08; H05K003-00
 CC 38-2 (Plastics Fabrication and Uses)
 Section cross-reference(s): 76

ST flexible metal clad polyimide laminate; printed
circuit board polyimide laminate; copper clad polyimide laminate;
polyamic acid coating copper foil

IT Metals, uses
(foils, laminates, with polyimide films, for printed
circuit boards, drying process in manufacture of)

IT Polyimides, uses
(laminates, with metal foils, for printed
circuit boards, drying process in manufacture of)

IT Electric circuits
(printed, boards, flexible, metal-clad polyimide
laminates for, drying process in manufacture of)

IT 54570-91-1 110749-59-2
(films, metal-clad laminates, drying process in
manufacture of, with curling resistance)

L36 ANSWER 34 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1992:73975 HCAPLUS Full-text
DOCUMENT NUMBER: 116:73975
ORIGINAL REFERENCE NO.: 116:12393a,12396a
TITLE: Manufacture of conductor-polyimide-conductor
laminated body
INVENTOR(S): Tokumitsu, Akira; Watanabe, Takashi; Shirakawa,
Makoto
PATENT ASSIGNEE(S): Nippon Steel Chemical Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 03104185	A	19910501	JP 1989-240633	19890919
			<--	
JP 06093537	B	19941116		
JP 10323935	A	19981208	JP 1998-27442	19980209
			<--	
JP 3034838	B2	20000417		
PRIORITY APPLN. INFO.:			JP 1989-240633	A3 19890919
			<--	

ED Entered STN: 21 Feb 1992

AB A method for manufacturing a flexible conductor-polyimide-conductor laminated body involves the following steps: (1) coating, on a 1st conductive metal foil, a polyimide resin (or precursor) solution, and heat treating to form a polyimide layer; and (2) laminating a 2nd conductor metal foil on the polyimide layer in a high-temperature and high-pressure atom (e.g. by vacuum press). The above laminated body is useful for a flexible printed board.

IT 54953-19-9
(laminated conductor boards from, manufacture of)

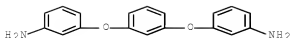
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

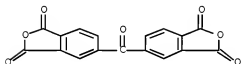
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

CMF C17 H6 O7



IC ICM H05K001-03
ICS B32B015-08
CC 76-2 (Electric Phenomena)
IT 24980-39-0 26615-45-2 28825-50-5 28827-74-9 28982-85-6, DABP
29319-22-0 32197-39-0 54053-19-9 54571-76-5 54571-77-6
74049-11-9 104955-74-0 105063-23-8 106826-95-3 117475-82-8
138309-30-5 138634-43-2
(laminated conductor boards from, manufacture of)

L36 ANSWER 35 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1991:420515 HCAPLUS Full-text
DOCUMENT NUMBER: 115:20515
ORIGINAL REFERENCE NO.: 115:3467a
TITLE: Flexible metal-clad laminate
and its manufacture
INVENTOR(S): Yoshida, Shunji; Morita, Moriiji; Tanabe, Kenji
PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 02122697	A	19900510	JP 1988-274428	19881101
			<--	
JP 2729063	B2	19980318		
PRIORITY APPLN. INFO.:			JP 1988-274428	19881101
			<--	

ED Entered STN: 12 Jul 1991

AB In a flexible metal clad laminate, which comprises a heat-resistant polymer film layer having a metal layer on its 1 side, the heat-resistant polymer film layer comprises ≥ 2 types of heat-resistant polymer layers. The heat-resistant

polymer film layer may comprises a polyamideimide or polyimide. The manufacture of the flexible metal clad laminate involves: (1) casting and heating the heat-resistant polymer (or its precursor), which is dissolved in a solvent on a metal foil; and (2) casting a different type heat-resistant polymer (or its precursor) followed by heat drying. The bonding property and heat resistance are improved. The laminate is useful for a printed circuit board.

IT 54053-19-9 110749-59-2

(laminates from, metal-clad)

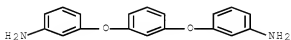
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

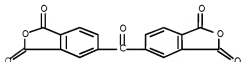
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

CMF C17 H6 O7



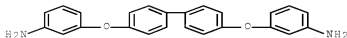
RN 110749-59-2 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 3,3'-[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

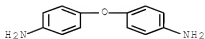
CMF C24 H20 N2 O2



CM 2

CRN 101-80-4

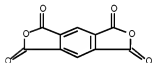
CMF C12 H12 N2 O



CM 3

CRN 89-32-7

CMF C10 H2 O6



IC ICM H05K003-46

CC 76-14 (Electric Phenomena)

Section cross-reference(s): 38

ST flexible metal clad laminate; polyamideimide
metal clad laminate; polyimide metal clad
laminate; printed circuit board laminateIT Polyamides, uses and miscellaneous
(laminates from, metal-clad)IT Polyimides, uses and miscellaneous
(polyamide-, laminates from, metal-clad)IT Polyamides, uses and miscellaneous
(polyimide-, laminates from, metal-clad)IT Electric circuits
(printed, boards, metal-clad laminates)IT 25036-53-7 25038-81-7, 4,4'-Diaminodiphenyl ether-pyromellitic acid
dianhydride copolymer 54053-19-9 103734-88-9
110749-59-2
(laminates from, metal-clad)

L36 ANSWER 36 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1990:498949 HCAPLUS Full-text

DOCUMENT NUMBER: 113:98949

ORIGINAL REFERENCE NO.: 113:16725a,16728a

TITLE: Flexible metal-laminated

polymer films for printed circuit boards
INVENTOR(S): Morita, Moriji; Yoshida, Shunji; Tanabe, Kenji
PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

DOCUMENT TYPE: CODEN: JKXXAF
 LANGUAGE: Patent
 FAMILY ACC. NUM. COUNT: 1 Japanese
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01174439	A	19890711	JP 1987-335726	19871228
			<--	
PRIORITY APPLN. INFO.:			JP 1987-335726	19871228
			<--	

ED Entered STN: 16 Sep 1990

AB The title laminates with good interlayer adhesion and heat resistance are prepared by forming N-containing silane coupling agent [e.g., R₁NHR₂Si(OMe)₃ (I), R₁ = H, Me, (monohalo- or dihalo-substituted)Ph; R₂ = (CH₂)₁₋₅] layers between the metal foils and heat-resistant plastic films (e.g., polyimides). A Cu foil was coated with a Cellosolve acetate solution of I [R₁ = Ph, R₂ = (CH₂)₃] and laminated with 4,4'-diaminodiphenyl ether-pyromellitic dianhydride copolymer to give a laminate having peel strength 1.8 kg/cm, good solder resistance, and dielec. constant 3.0, vs. 0.4, good solder resistance, and 3.0, resp., for a laminate without the coupling agent layer.

IT 110749-59-2
 (metal foil-laminates, with aminosilane coupling agents, for circuit board)

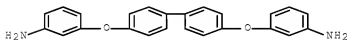
RN 110749-59-2 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

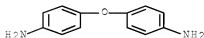
CMF C24 H20 N2 O2



CM 2

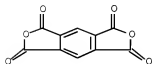
CRN 101-80-4

CMF C12 H12 N2 O



CM 3

CRN 89-32-7
CMF C10 H2 O6



IC ICM B32B015-08
ICS B32B007-02; B32B007-12; H05K001-03
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
IT Coupling agents
(aminosilanes, heat-resistant plastic film-metal foil laminates using, for circuit boards)
IT Electric insulators and Dielectrics
(heat-resistant plastic film-metal foil laminates as, for circuit boards)
IT Polyimides, uses and miscellaneous
(metal foil-laminates, with aminosilane coupling agent layers, for circuit boards)
IT Polyimides, uses and miscellaneous
(polyamide-, metal foil-laminates, with aminosilane coupling agent layers, for circuit boards)
IT Polyamides, uses and miscellaneous
(polyimide-, metal foil-laminates, with aminosilane coupling agent layers, for circuit boards)
IT 1760-24-3 3068-76-6 119777-51-4
(coupling agents, heat-resistant plastic film-metal foil laminates for circuit boards)
IT 25036-53-7 25038-81-7 110749-59-2 128724-82-3
(metal foil-laminates, with aminosilane coupling agents, for circuit board)

L36 ANSWER 37 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1990:100245 HCAPLUS Full-text

DOCUMENT NUMBER: 112:100245

ORIGINAL REFERENCE NO.: 112:17047a,17050a

TITLE: Flexible metal-clad plastic laminates

INVENTOR(S): Morita, Moriji; Sato, Takushi; Yamanaka, Hidesuke; Yoshida, Shunji; Tanabe, Kenji

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01082927	A	19890328	JP 1987-238866	19870925

<--

PRIORITY APPLN. INFO.:

JP 1987-238866

19870925

<--

ED Entered STN: 18 Mar 1990

AB Title laminates without curling are useful for flexible printed circuit boards. A N-methylpyrrolidone solution of 1,4-diamino-2-methylbenzene-pyromellitic dianhydride copolymer (polyamic acid) was applied on a 35- μ m Cu foil and imidated at 400° to give a Cu foil-polyimide laminate curling to the metal side with radius of curvature 2.5 cm, which was removed with pressure by contacting the plastic side over an edge to give a laminate curling to the plastic side with radius of curvature 15 cm.

IT 105210-97-1 105359-94-2 110749-59-2
(metal foil laminates, without curling, for printed circuit boards)

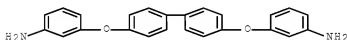
RN 105210-97-1 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] (CA INDEX
NAME)

CM 1

CRN 105112-76-3

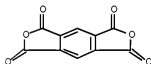
CMF C24 H20 N2 O2



CM 2

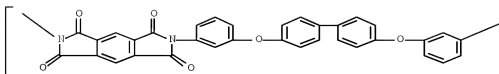
CRN 89-32-7

CMF C10 H2 O6



RN 105359-94-2 HCAPLUS

CN Poly[(5,7-dihydro-1,3,5,7-tetraoxobenzo[1,2-c:4,5-c']dipyrrole-
2,6(1H,3H)-diyl)-1,3-phenyleneoxy[1,1'-biphenyl]-4,4'-diyl]-1,3-
phenylene] (CA INDEX NAME)

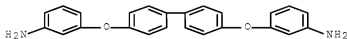


RN 110749-59-2 HCAPLUS
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

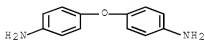
CMF C24 H20 N2 O2



CM 2

CRN 101-80-4

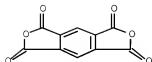
CMF C12 H12 N2 O



CM 3

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B015-08
ICS H05K003-22
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56
ST flexible metal clad plastic laminate; noncurling
copper foil polyimide laminate; printed circuit board flexible
substrate
IT Polyamic acids
(imidation of, for laminates with metals,
flexible and noncurling)
IT Polyimides, uses and miscellaneous
(metal foil laminates, flexible with high peel
strength, for printed circuit boards)
IT Electric insulators and Dielectrics
(metal foil plastic laminates, without curling,
for printed circuit boards)
IT Amidation
(imidation, of polyamic acids, for laminates with
metals, flexible and noncurling)
IT Electric circuits
(printed, boards, flexible noncurling metal-plastic
laminates for)
IT 87431-23-0 87500-86-5 105156-69-2 105218-97-1
105359-94-2 110749-59-2
(metal foil laminates, without curling, for
printed circuit boards)

L36 ANSWER 38 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1990:78922 HCAPLUS Full-text
DOCUMENT NUMBER: 112:78922
ORIGINAL REFERENCE NO.: 112:13495a,13498a
TITLE: Flexible metal-plastic laminates
INVENTOR(S): Morita, Moriji; Sato, Takushi; Yamanaka, Hidesuke;
Yoshida, Shunji; Tanabe, Kenji
PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

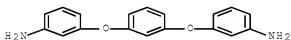
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 01080521	A	19890327	JP 1987-237498	19870924
			<--	
PRIORITY APPLN. INFO.:			JP 1987-237498	19870924
			<--	
ED Entered STN: 03 Mar 1990				

- AB The laminates, useful for flexible printed circuit boards, have bending ability over an 0.8-mm (radius of curvature) edge (B08) ≥ 200 cycles and peel strength at 200° ≥ 0.5 kg/cm. A Me2NAC solution of 1,3-bis(3-aminophenoxy)benzene-3,3',4,4'-benzophenonetetracarboxylic dianhydride-4,4-diaminodiphenyl ether copolymer (polyamic acid) was applied to a 35- μ m Cu foil and cyclized at 360° to give a Cu foil-polyimide laminate having B08 280 cycles and peel strength 1.1 and 1.0 kg/cm at 25° and 200°, resp.
- IT 54570-91-1 110749-59-2
(copper foil laminates, flexible, with high peel strength, for printed circuit boards)
- RN 54570-91-1 HCAPLUS
- CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 4,4'-oxybis[benzenamine] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

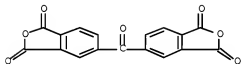
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

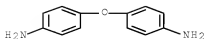
CMF C17 H6 O7



CM 3

CRN 101-80-4

CMF C12 H12 N2 O



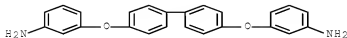
RN 110749-59-2 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
3,3'-[[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

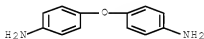
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CM 2

CRN 101-80-4

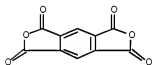
CMF C12 H12 N2 O



CM 3

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B015-08

ICS H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

ST flexible metal foil plastic laminate; copper foil
polyimide film laminate; printed circuit board flexible substrate

IT Electric circuits

(printed, boards, flexible metal foil-plastic film
laminates for manufacture of)

IT 54570-91-1 110749-59-2

(copper foil laminates, flexible, with high peel strength, for
printed circuit boards)

L36 ANSWER 39 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 1987:577492 HCAPLUS Full-text
 DOCUMENT NUMBER: 107:177492
 ORIGINAL REFERENCE NO.: 107:28499a,28502a
 TITLE: Manufacture of flexible printed circuit boards
 INVENTOR(S): Morita, Moriji; Miyazaki, Kazuo; Yamaguchi, Teruhiro; Ota, Masahiro; Tamai, Masaji
 PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62104840	A	19870515	JP 1985-242936	19851031
			<--	
JP 06086534	B	19941102	JP 1985-242936	19851031
			<--	

PRIORITY APPLN. INFO.:
 ED Entered STIN: 14 Nov 1987

AB Title boards are manufactured from laminates of metal foils and thermoplastic polyimide films using adhesive layers obtained by the reaction of aromatic tetracarboxylic anhydrides and sym. aromatic primary amines including 100-20 mol% compds. having m-phenylene groups. Thus, 73.7 g 4,4'-bis(3-aminophenoxy)biphenyl (I) and 43.6 g pyromellitic dianhydride were mixed in 250 mL AcNMe₂ at 0° for 2 h and at room temperature for 20 h to give a polyamic acid solution having log. viscosity (at 35°, 0.5 g/dL in AcNMe₂) 1.9 dL/g. Diluting with AcNMe₂ gave a 12% solution with viscosity 30,000 cP, which was spread on a glass plate, dried, and heat cured to give a 15-μ adhesive layer. Vacuum pressing this layer between 35-μ Cu foil and 25-μ polyimide (Kapton) film at 300° and 20 kg/cm² for 30 min gave a circuit board having foil peel strength 1.7 kg/cm, surface resistivity 1.8 + 10¹⁶ Ω, good solder resistance, flexural fatigue resistance 180 times, and dimensional shrinkage (IPC-FC-241A test) 0.08%; vs. 0.4, 1.6 + 10¹⁶, good, 60, and 0.09, resp., using 4,4'-diaminodiphenyl ether in place of I.

IT 54053-19-9 105218-97-1,
 4,4'-Bis(3-aminophenoxy)biphenyl-pyromellitic dianhydride copolymer
 107137-62-2 110970-31-5
 (adhesives, for polyimide flexible printed circuit boards,
 heat-resistant)

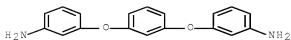
RN 54053-19-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with
 3,3'-(1,3-phenylenebis(oxy))bis[benzenamine] (CA INDEX NAME)

CM 1

CRN 10526-07-5

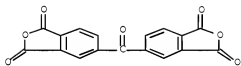
CMF C18 H16 N2 O2



CM 2

CRN 2421-28-5

CMF C17 H6 O7



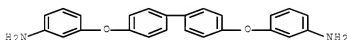
RN 105218-97-1 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] (CA INDEX
NAME)

CM 1

CRN 105112-76-3

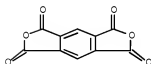
CMF C24 H20 N2 O2



CM 2

CRN 89-32-7

CMF C10 H2 O6



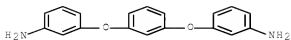
RN 107137-62-2 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
4,4'-oxybis[benzenamine] and 3,3'-[1,3-
phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 10526-07-5

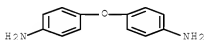
CMF C18 H16 N2 O2



CM 2

CRN 101-80-4

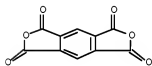
CMF C12 H12 N2 O



CM 3

CRN 89-32-7

CMF C10 H2 O6



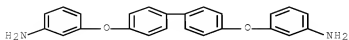
RN 110970-31-5 HCAPLUS

CM 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 3,3'-[[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 105112-76-3

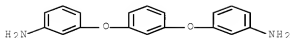
CMF C24 H20 N2 O2



CM 2

CRN 10526-07-5

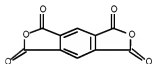
CMF C18 H16 N2 O2



CM 3

CRN 89-32-7

CMF C10 H2 O6



IC ICM C08J005-12

ICS B32B015-08; H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

IT Electric circuits

(printed, boards, flexible, polyimide-metal foil laminates, adhesives for, polyimides of sym.

meta-substituted aromatic diamines as)

IT 54053-19-9 105218-97-1,

4,4'-Bis(3-aminophenoxy)biphenyl-pyromellitic dianhydride copolymer
105359-94-2 107137-62-2 110970-31-5

(adhesives, for polyimide flexible printed circuit boards, heat-resistant)

L36 ANSWER 40 OF 40 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1987:555834 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 107:155834

ORIGINAL REFERENCE NO.: 107:25079a,25082a

TITLE: Flexible printed circuit boards

INVENTOR(S): Morita, Moritsugu; Miyazaki, Kazuo; Yamaguchi, Akihiro; Ohta, Masahiro; Tamai, Shoji; Nishihara, Kunio

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan

SOURCE: PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

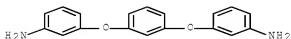
PATENT NO.

KIND DATE

APPLICATION NO.

DATE

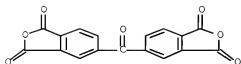
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WO 8702620	A1	19870507	WO 1986-JP554 <--
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W: KR, US			
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JP 62208690	A	19870912	JP 1986-255908 <--
			19861029
JP 06082895	B	19941019	
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US 4839232	A	19890613	US 1987-69449 <--
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PRIORITY APPLN. INFO.:			JP 1985-242935 <--
			A 19851031
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			A 19861029
			WO 1986-JP554 <--
			W 19861031
ED Entered STN: 31 Oct 1987			
AB The flexible board prepared by coating 10 μ -l mm polyimide [prepared from sym. aromatic 10-60:40-90 (equivalent) meta-para substituted primary diamines and aromatic tetracarboxylic dianhydride] on a metal foil has good heat resistance, elec. properties, and flexibility. Thus, a mixture of 3,3',4,4'-benzophenonetetracarboxylic dianhydride 0.20, 1,3-bis(3-aminophenoxy)benzene 0.08, and 4,4'-diaminodiphenyl ether 0.12 mol in AcNMe2 was polymerized 24 h at 10° and diluted with AcNMe2 to give a 15%-solids solution which was coated 25 μ -thick (dry) on a 35- μ Cu foil and heated 60 min at 130° then 60 min at 260° to give a circuit board substrate having peel strength 1.2 kg/cm, surface resistivity 1.3 + 1016 Ω , and good solder heat resistance.			
IT 54570-91-1 110749-59-2 110749-60-5			
(laminated with metal foils, for flexible printed circuit board, heat-resistant)			
RN 54570-91-1 HCAPLUS			
CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with 4,4'-oxybis[benzenamine] and 3,3'-[1,3-phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)			
CM 1			
CRN 10526-07-5			
CMF C18 H16 N2 O2			



CM 2

CRN 2421-28-5

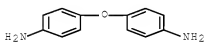
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CM 3

CRN 101-80-4

CMF C12 H12 N2 O



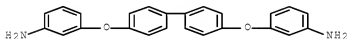
RN 110749-59-2 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 3,3'-[1,1'-biphenyl]-4,4'-diylbis(oxy)bis[benzenamine] and
 4,4'-oxybis[benzenamine] (CA INDEX NAME)

CM 1

CRN 105112-76-3

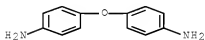
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CM 2

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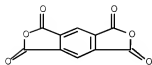
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CM 3

CRN 89-32-7

CMF C10 H2 O6



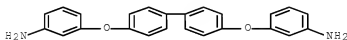
RN 110749-60-5 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with
 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] and
 4,4'-[[1,1'-biphenyl]-4,4'-diylbis(oxy)]bis[benzenamine] (9CI) (CA
 INDEX NAME)

CM 1

CRN 105112-76-3

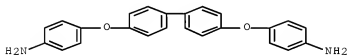
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CM 2

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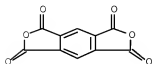
CMF C24 H20 N2 O2



CM 3

CRN 89-32-7

CMF C10 H2 O6



IC ICM B32B015-08
 ICS H05K003-38; H05K001-03; C08G073-10

CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 76

IT Heat-resistant materials
 (aromatic polyimides laminated on metal foils as,
 for printed circuit boards, flexible and heat-resistant)

IT Polyimides, uses and miscellaneous
 (laminated with metal foils, for flexible
 printed circuit boards, heat-resistant)

IT Electric circuits
 (printed, boards, aromatic polyimides laminated on
 metal foils as, flexible and heat-resistant)

IT 54570-91-1 110749-59-2 110749-60-3
 110749-61-6 110749-62-7 110749-63-8 110749-64-9
 (laminated with metal foils, for flexible
 printed circuit board, heat-resistant)

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(FILE 'HOME' ENTERED AT 10:29:02 ON 05 DEC 2008)

FILE 'HCAPLUS' ENTERED AT 10:29:10 ON 05 DEC 2008

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      SEL RN

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      24980-39-0/BI OR 24991-11-5/BI OR 28827-74-9/BI OR
      3006-93-7/BI OR 500577-35-5/BI OR 500577-36-6/BI OR
      51518-44-6/BI OR 54053-19-9/BI OR 54571-76-5/BI OR
      54909-96-5/BI OR 58845-19-5/BI OR 58845-24-2/BI OR
      606081-14-5/BI OR 689258-98-8/BI OR 689259-00-5/BI OR
      689259-05-0/BI)
L3      7 SEA ABB=ON PLU=ON L2 AND AMINOPHENOX?
      E 1,3-BIS(3-(3-AMINOPHENOXY) PHENOXY) BENZENE/CN
L4      2158 SEA ABB=ON PLU=ON 3-AMINOPHENOXY?/CNS
L5      6 SEA ABB=ON PLU=ON L4 AND L2
L6      261 SEA ABB=ON PLU=ON L4 AND 1,3-BIS?
L7      96 SEA ABB=ON PLU=ON L4 AND PHENYL ETHER?
L8      225 SEA ABB=ON PLU=ON 105112-76-3/CRN
L9      6055 SEA ABB=ON PLU=ON 2421-28-5/CRN
L10     8442 SEA ABB=ON PLU=ON 89-32-7/CRN
L11     2 SEA ABB=ON PLU=ON L5 AND SRU
L12     0 SEA ABB=ON PLU=ON 105-26-07-5/CRN
L13     795 SEA ABB=ON PLU=ON 10526-07-5/CRN
L14     225 SEA ABB=ON PLU=ON 105112-76-3/CRN
L15     36 SEA ABB=ON PLU=ON 500577-28-6/CRN
L16     13793 SEA ABB=ON PLU=ON L9 OR L10
L17     387 SEA ABB=ON PLU=ON L16 AND (L13 OR L14 OR L15)

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L18     518 SEA ABB=ON PLU=ON L11
L19     791 SEA ABB=ON PLU=ON L17
L20     1 SEA ABB=ON PLU=ON L19 AND L1
L21     447 SEA ABB=ON PLU=ON L19(L)PREP/RL
L22     169 SEA ABB=ON PLU=ON L21(L)PRP/RL
L23     1 SEA ABB=ON PLU=ON L22 AND L1
L24     14 SEA ABB=ON PLU=ON L22 AND METAL(3A) LAMINAT?
L25     78 SEA ABB=ON PLU=ON L19 AND METAL(3A) LAMINAT?
L26     57 SEA ABB=ON PLU=ON L21 AND METAL(3A) LAMINAT?
L27     23 SEA ABB=ON PLU=ON L18(L)METAL(3A) LAMINAT?
L28     48 SEA ABB=ON PLU=ON L19(L)METAL(3A) LAMINAT?
L29     49 SEA ABB=ON PLU=ON L27 OR L28
L30     13 SEA ABB=ON PLU=ON L29 AND PRP/RL
L31     38 SEA ABB=ON PLU=ON L28 AND PREP/RL
L32     49 SEA ABB=ON PLU=ON (L29 OR L30 OR L31)
L33     27 SEA ABB=ON PLU=ON L32 AND (1840-2002)/PRY,AY,PY
L34     78 SEA ABB=ON PLU=ON L24 OR L25 OR L26
L35     39 SEA ABB=ON PLU=ON L34 AND (1840-2002)/PRY,AY,PY
L36     40 SEA ABB=ON PLU=ON L33 OR L35

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